TEXTILE TECHNOLOGY DIGEST

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Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

World Fiber Review 1949. (FAO Commodity Series—Bull. No. 14). Food and Agriculture Organization of the United Nations, Washington, D. C. New York, Columbia University Press, 1949. 118 p. Price: 50¢.

This bulletin, based on statistics and information available up to June 30, 1949, is the third study of world fiber production and consumption published by the FAO. (Previous studies are: *World Fiber Survey, 1947*, and *World Fibers Review, 1948*). Factors affecting production and consumption of both natural and man-made fibers and manufactured textiles in the principal countries of the world are considered. Statistical data are given in 41 tables and 2 appendices. Fibers included in the review are: cotton, wool, silk, flax, hemp, jute, abaca, sisal, henequen, rayon staple and filament and nylon.

Natural fibers A 1

Controlled retting. Solomon W. Schwartzman. *Frontier*, 14-19 (Mar. 1950).

The retting process is reviewed and briefly discussed and it is reported that recent work at the Armour Research Foundation in biological retting has indicated that completely-controlled retting can be used with dried coconut husk. This material, which normally requires a retting period of a year or more, has been retted in 4 to 5 days in laboratory and pilot-plant scale experiments. The problem was solved after a systematic survey of active retting organisms, their nutritional requirements, and optimum temperature and aeration needs. It is believed that a similar retting process can be developed for any other textile bast fiber, ramie, kenaf, hemp, etc., where there is a desire to improve the yield and quality of the fiber. The advantage of biological retting over chemical retting or mechanical decortication is that of increased yield.

Relation of fibers and yarn influenced by several factors. Robt. W. Webb &. Howard B. Richardson. *Textile World 100*, 128-29, 226, 228 (Feb. 1950).

(Abstracted from USDA report 'Relation of Six Elements of Cotton Quality to Strength of 22's Yarn, Regular Draft, by Crop Year, Variety, and Staple Length.) This study was made to test cottons according to staple lengths and various combinations of staple length, variety, and crop year. The 3 most important properties were found to be upper half mean length, fiber weight per inch, and fiber strength. Of relative unimportance were grade index, percentage of mature fibers, and uniformity ratio. The most important fiber properties are listed according to variety and to staple length. Tables show much of the results of these tests.

Structure of wool and hair. Joel Lindberg & Bo Philip. *Melliand Textilber. 31*, 32-5 (Jan. 1950); *in German.*

The cuticle of animal hair is composed of 3 elements viz: 1) The outer epicuticle with a thickness of 100 A; 2) a digestible intermediate layer, known as the exocuticle; and 3) the endocuticle built up of the resistant components of the scale cells. The authors have investigated the connections of these 3 layers with the subcutis discovered by Reumuth, which he isolated and prepared by the methods of Lehmann, Elöd and Zahn, and Geiger. The electron microscope discloses that it is not localized beneath the cuticle, but consists of Lehmann's tubules and Geiger's sheaths out of the epicuticle together with varying quantities of the exocuticle and the endocuticle, which may fuse together under certain conditions to form a skin.

What mean fiber lengths mean to yarn quality. E.

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H. Helliwell. *Textile World 100,* 129, 252, 254 (Mar. 1950).

Five questions about mean fiber lengths are answered by explanation, charts, and graphs. Variation in mean fiber lengths among different specimens of the same classified length is shown to be from a low of 9.7% to 28%. Mean length is closely parallel to but less than classified length. An experienced classer can detect unusual amounts of short fibers, but a fiber array diagram gives an accurate picture. A large mix is the best safeguard against weak yarn, for the larger the mix the closer its average mean length will be to the average mean length of all the total. A high uniformity ratio is desirable. This is the relation between mean and classified lengths.

Wool growth as affected by environment and other factors. John I. Hardy. *Textile Research J. 20,* 189-93 (Mar. 1950).

This is a report of investigations that revealed that, in general, wool grows fastest in the summer and early fall when sheep have the best feed. Data on growth of wool for different types of sheep are presented.

Artificial fibers A 2

Cellulose derivatives. J. P. Hollihan, Jr. & S. A. Moss (to Am. Viscose Corp.). USP 2 499 501, Mar. 7, 1950.

A method of producing fibers of cyanoethyl cellulose by reaction of acrylonitrile with viscose.

Insolubilizing cellulose esters. Hugh J. Hagemeyer, Jr. (to Eastman Kodak Co.). USP 2 500 029, Mar. 7, 1950.

Cellulose derivative fibers having increased laundering and wearing resistance as a result of treatment with diketene and subsequently with formaldehyde.

Manufacture of artificial threads. Raymond B. Richards (to Can. Industries Ltd.). Can. P. 456 914, May 24, 1949.

An elastic filament obtained by continuously producing a molten filament from polythene of molecular weight 15,000-30,000, solidifying the filament, and applying tension to the length of molten and solidified filament by winding the solidified filament at a linear rate at least 3 times the linear rate of molten filament formation.

New synthetic fibers. Karl Fabel. *Melliand Textilber. 31,* 110-12 (Feb. 1950); *in German.*

The synthetic fibers known as Vinyon, nylon, Perlon and PeCe, have acquired an international reputation and find many applications. Within the last few years there have been made new synthetic fibers of which the basic materials are totally different from the products just mentioned, among them being, in particular, Vinyon N, Fiber A, Saran and Terylene, which are treated in detail in this paper.

Regenerated keratin fibers. Anon. *Fibers 11,* 63-5 (Feb. 1950).

This is a report of a lecture by R. L. Wormell. Waste keratin, derived either from the waste products of the wool industry itself, or from horns and hooves of cattle, have the same protein composition and same general structure as wool. By the addition of alkali, sodium disulfide, and finally the addition of acid, the protein material can be isolated. The proper processing then yields fibers which have suitable properties for textile uses.

YARN PRODUCTION B

COTTON SPINNING; REPORT OF A VISIT TO THE U. S. A. IN 1949 OF A PRODUCTIVITY TEAM REPRESENTING THE COTTON SPINNING INDUSTRY. London and New York, Anglo-American Council on Productivity, 1950. 121 p. Price: 3s.

This report of the British productivity team on American spinning equipment, processes, and test methods contains a detailed picture of American practices. While much of the discussion is directed toward comparisons of American and British practice, the analyses of procedure, production, work load, etc., should be of interest to any mill spinning cotton yarn.

Heat dissipating cot for textile rolls. Alfred J. Maino. Can. P. 456 666, May 17, 1949.

A textile roller comprising an arbor and a sleeve-like cot of rubber or rubber-like material mounted on the arbor in surrounding relationship thereto, the cot having numerous heat dissipating openings extending from its inner, arbor-contacting face to its outer face.

High drafting; modern Casablancas systems for cardroom and spinning. I-II. Walter Andrew. *Textile Mercury & Argus 122,* 355, 357-58 (Mar. 3, 1950); 392, 394, 397-98 (Mar. 10, 1950).

In a lecture, details of the Casablancas high draft systems are discussed.

Synthetic fibers in the woolen industry. Edw. Dob-

bins. *Rayon & Syn. Tex. 31,* 69-71 (Mar. 1950); 68-9 (Apr. 1950).

The advantages to be obtained by the use of synthetic fibers with wool are discussed. Cheaper wools may be used, improvement of abrasion and shrinkage resistance, and greater consumer satisfaction are some of the advantages noted.

Fiber preparation B 1

Direct spinning machine and method. Chas. E. Neisler, Jr. USP 2 497 511, Feb. 14, 1950.

A stretch break system for the conversion of continuous rayon filamentary bundles into a spun rayon yarn directly. The system involves the pressing of the filamentary bundle against the surface of one roll of the faster pair by means of a belt.

Dry cleaning process for degreasing wool. M. T. Hoffman. *Can. Textile J. 67,* 51-3 (Mar. 31, 1950).

The use of the Hoffman patented process for degreasing wool is described. This process uses superimposed rollers between which the fibers are continuously moved while being sprayed with solvent under application of a highly efficient scrubbing action. A non-volatile naphtha product, "Fialasol," is used as a solvent. Advantages of the new system over the present continuous trichloroethylene system include: savings in space and heat, removal of paint and tar, requires no equipment for continuous distilling of the solvent fumes, low cost of Fialasol solvent, eliminates one complete drying operation, gives better handle to fibers, removes more of the dirt and sand right in the solvent unit, thus requiring less rinsing. The new method increases the yield of tops and decreases card waste, and improves quality of goods so that less expensive blends can be used.

Dust suppression by cotton oiling. Anon. *Textile Weekly 45,* 680 (Mar. 17, 1950).

"Celconus A", a cotton spraying oil announced by Shell Chemicals, Ltd., is based on a highly refined mineral oil, and has no tendency towards oxidation or gumming. It readily forms stable emulsions with water and is sprayed in this form onto the cotton in the hopper feeder. In processing raw cotton a maximum of 0.2% of the oil on the weight of cotton is required. Advantages obtained include reduction in dust and fly, cleaner machinery, more compact wastes, better drawing and spinning, and reduction in static electricity during processing.

Fiber pickup drum and squeeze roll. Edw. H. Brooks, Sr. (½ to Elton H. Thompson). USP 2 498 646, Feb. 28, 1950.

An improved fiber pick-up drum and squeeze roll for fiber stock scouring and washing tanks which is so constructed that the fiber stock in the tank after being thoroughly washed and scoured is positively picked up by the drum, rinsed and squeezed to remove the excess washing fluid therefrom, and finally brushed from the drum by means of a rapidly rotating doffer or ejector roll into a chute for rewashing or removal to a suitable drying chamber.

Method and apparatus for converting continuous filaments into spinnable slivers. Wm. H. Furness (to Am. Viscose Corp.). Can. P. 456 700, May 17, 1949.

The method of converting a continuous aggregate of filaments of indefinite length into a staple fiber product without loss of continuity thereof comprising continuously feeding the aggregate as a band of generally parallelized filaments, disrupting a portion only of the filaments in the band at intervals, twisting the band with the disrupted filaments generally disposed within the undisrupted filaments, and then disrupting previously undisrupted filaments in the twisting band.

New openers and pickers make evener, cleaner laps. P. M. Thomas. *Textile World 100,* 112-13 (Mar. 1950).

The new opening and cleaning machinery installed by Columbus Mfg. Co. consists of 2 lines, each line having 10 blending feeders, 6 No. 11 condensers, 4 No. 12 lattice openers, 6 No. 6 return air condensers with No. 7 air filters, and 2 inclined Superior cleaners. One line feeds 6 pickers, the other 5 pickers, with a total capacity of 3,300 lbs. per hour. Tramp iron magnets and sprinklers improve fire control. A table is given showing cleaning and maintenance schedule.

Olein and mineral oil lubricants. W. H. Mühle. *Melliand Textilber. 31,* 196-99 (Mar. 1950); *in German.*

Good olein lubricants and good lubricants composed of mineral oil are compared with one another, whereby the author determines the essential conditions which mineral oil lubricants must satisfy, in order to be able to replace olein lubricants to advantage. Mineral oil lubricants must be washed out of wool by a process that differs fundamentally from that employed when dealing with olein lubricants. Mineral oil lubricants may only be mixed with other lubricants of the same

type and also with olein lubricants under certain definite conditions.

Problems in the development of efficient woolen-fiber lubricants. Paul J. Martin. *Am. Dyestuff Reptr. 39*, P223-28 (Apr. 3, 1950).

Routine procedures and specialized test methods and apparatus used in the development of wool oils in the laboratory are discussed. The results of a comprehensive wool-oil evaluation program at Lowell Textile Institute are given. These tests were primarily a study of self-scouring wool oils and produced significant data on carding, spinning, weaving, and wet finishing. The work at Lowell utilized laboratory-control on plant-size equipment.

Production of yarn from staple fibers. Jas. Mackie Sons, Ltd. Australian P. 136 308, Jan. 23, 1950.

For preparation of staple fibers from continuous tows there is provided a carding machine with a moving feed member, means for delivering continuous tow, cutting means such as discs, mechanism for moving the cutting means forwardly and backwardly and mechanism for depressing the cutting means so as to cause it to pass into gaps in the feed member during the forward movements while the filaments are gripped by a plate.

Production of yarn from staple fibers. John P. Mackie (to Jas. Mackie & Sons, Ltd.). Can. P. 455 713, Apr. 5, 1949.

Apparatus for forming slivers of staple fiber from tows of continuous filaments comprising a carding machine, a travelling feed member therefor, a severing device and means for supporting it movably over the feed member, means for imparting longitudinal to and fro movements to the severing device parallel to the direction of movement of the feed member, and for imparting intermittent rising and falling movements to the severing device relatively to the feed member, means for delivering a plurality of continuous filament tows in parallel relation and spaced apart laterally on the surface of the feed member, the rising and falling movement of the severing device being timed in relation to its to and fro movements so that the severing device severs the filaments of the continuous tows during the movements of the severing device in the same direction of travel as that of the feed member, and leaves bunches of staple fiber on the feed member directed end-on toward the carding machine.

Cleaning device for crushing apparatus incorporated in carding engines. Edw. Quinn (to Platt Bros. & Co., Ltd.). Can. P. 455 732, Apr. 5, 1949.

Device for cleaning adjacent parallel fluted crushing rollers of crushing apparatus used in a carding engine to crush impurities in a thinly spread out web, comprising a fluted cleaning roller adapted to rest freely between and on and supported solely by the 2 adjacent fluted crushing rollers, a bottomless shifting carriage for the cleaning roller and end retaining members on the carriage to engage the ends of the roller in turn when in shifting operation while leaving the cleaning roller free to float and align itself by gravity only in relation to the crushing rollers when reciprocated thereon by the carriage.

Comparison of 2 methods of feeding the card. Walther Wegener. *Melliand Textilber. 31*, 90-3 (Feb. 1950); *in German.*

This article compares 2 methods of feeding with one another in regard to the uniformity of the card sliver produced and the author proves on the basis of extensive trials with the aid of the calculus of probabilities that lap joints between 2 consecutive weighings of the card material when disposed obliquely to the feed rollers show lower fluctuations in the count of the card sliver by from 25 to 35% compared with joints running parallel to the feed rollers.

Gilljam carding system. Josef Gilljam. *Melliand Textilber. 31*, 10-12 (Jan. 1950); *in German.*

Many years' experience in woolen spinning have led the author to seek for an increase of the output of the cards not so much in the application of a superdimensional doffer, as in the use of swift and doffer of normal dimensions, placing the fancy below the swift and thereby gaining space for another worker. The breaker card of the set is equipped with an efficient card with breast roller, and is fitted with large feed rollers and 2 large workers, while the intermediate card and the condenser card each carry a large breast roller. It is possible to get along with the simpler 2-card set to a much greater extent than formerly. Illustrated with diagrammatic sketches.

Long-staple rayon waste made economically on flax card. S. A. G. Caldwell. *Textile World 100*, 108, 236, 238, 240, 242 (Mar. 1950).

Mills using rayon waste must do some regrading because of the lack of a standard system of classi-

fication by producers and buyers. Opening and cleaning is best done on a roller and clearer type machine, preceded by a garnett or a breaker card if necessary. A standard flax-tow finisher card is the most effective and economical unit for processing rayon waste. These may have 6, 7, or 8 pairs of worker and stripper rolls. A diagram shows the path of the fibers through the machine. Settings, drives, functioning and speeds of the cards are explained in detail.

Quality control of carding and spinning through methods and systems of inspection. Anon. *Textile Bull. 76*, 43-4, 46, 48, 50 (Mar. 1950).

This is an abstracted stenographic report of the discussions of the Eastern Carolina Division of the Southern Textile Assn. on methods and systems of inspection used in the quality control of carding and spinning.

Sliver roll forming machine. Jas. S. Brown (to Douglas Fraser & Sons, Ltd.). USP 2 495 205, Jan. 24, 1950.

In sliver roll forming machines, particularly machines for winding into rolls sliver of jute or other bast fibers, there are provided small diameter arbor-starting discs, the diameter of which is only a fraction of the diameter of the finished sliver roll, and guide cheek-plates which extend toward the back of the machine and which are formed to extend partly around the discs. These cheek-plates are spaced apart a distance slightly exceeding the width of the roll and serve to keep the expanding roll in position and insure the building up of the roll to the correct width.

Wool carding; rubbers and rubbing motions. I-II. Anon. *Wool Record & Textile World 77*, 423, 425, 427 (Feb. 9, 1950); 497-98, 501 (Feb. 16, 1950).

Included in this discussion are the following topics: selection of rubbers, eccentric motions, the stroke or sidewise movement, processing fine wools, remedy for straggling threads, use of press rollers, longer stroke, variation in speed, and cleaning of leathers.

Drafting and roving B 3

Apparatus for automatically stopping textile machines. Wm. E. Shann (to Pacific Mills). USP 2 497 017, Feb. 7, 1950.

This invention provides a very sensitive mechanism to stop the rolls when "laps" begin to form and when the material being delivered is either above or below the predetermined standard of weight per unit length.

Stop mechanism for fly frames. Maurice Carrette (½ to Societe Le Bean & Cie). USP 2 500 343, Mar. 14, 1950.

In a fly frame for working slivers and the like, a stop mechanism comprising suction means adapted to create a fluid stream, a suction pipe connected with the suction means and provided with openings before which the slivers are adapted to pass in close relation, a perforated partition between the suction means and the suction pipe and adapted to be clogged by the slivers when broken so as to cause a variation of pressure of the stream, stopping means for the frame and controlling means for operating the stopping means under the action of the variation of pressure.

Spinning B 4

Arrangement for drafting and twisting fibrous material in spinning frames. Hugh Fraser (to Douglas Fraser & Sons, Ltd.). USP 2 498 364, Feb. 21, 1950.

According to the invention, to effect delivery of the sliver from the retaining means to the drawing rollers in a highly compacted form and narrow width so that drawing roller conductors, if used, have the minimum work to do, while using one or the other of the known arrangements of 2 endless aprons between which the sliver is drawn, or of one endless apron and a slipper resting on the sliver being drawn, lateral guides are provided to confine the sliver and to effect condensing of the fibers.

Balmes high draft system. Anon. *Platt's Bull. 6*, No. 12, 257-60 (1949); *Textile Mfr. 76*, 67-8 (Feb. 1950).

The Balmes high draft system is a roller drafting arrangement and does not utilize aprons. It consists of 4 lines of bottom rollers and 5 lines of top rollers. The strand of fibers from the creel bobbin is presented to the back line of rollers through a condensing guide which is attached to the back roving guide and given a constant traverse. The function of this guide is to compact into the main body of the strand, before any drafting action occurs, all those fibers which tend to protrude. The main advantages of the system are: 1) a mechanism which is easy to handle; it can be applied readily to all makes of existing ring frames; 2) improved yarn quality; 3) increased yarn strength; 4) cleanliness; 5) reduced waste; and 6) low maintenance cost.

Hegemax spinning device. Wm .R. Batorffy. *Melliand Textilber. 31*, 9-10 (Jan. 1950); *in German.*

The new spinning process substitutes a small rapidly rotating turbine body, known as the "Hegemax", for the thread guide on the ring spinning frame, thereby imparting a preliminary twist to the yarn before the ballooning, so that it is better adapted to stand the actual ring spinning process. Large-scale trials have proved that the yarn acquires a fine-looking uniform character and that breaking strength and elasticity are both improved. Apart from the improvement of the properties of the yarn, there is the further advantage that there is much less yarn breakage and the cotton can be spun out better.

High draft spinning. F. Walz. *Melliand Textilber. 31*, 7-8 (Jan. 1950); *in German.*

Well tried solutions of the problems of working with high draft on spinning machines have been familiar for more than 15 years. At the present date, numerous mills are still engaged in experimental and development work on high-draft drawing rollers of the draw frame, the comber and the flyer spinning frame. The firm of Saco-Lowell has brought out a type of drawing frame known as the Shaw Drawing Frame, which applies new methods, and the present article describes its application on the comber and on the flyer spinning frame.

Latch mechanism for textile spindles. John K. Cochran (to The Marquette Metal Products Co.). USP 2 497 865, Feb. 21, 1950.

An apparatus for spinning and twisting textile yarns comprises a rotatable spindle, an unbalanced package carrier mounted on it with the package carrier adapted to be stationary while the spindle rotates. A mounting for the spindle comprises a base member resiliently mounted for slidable movement on a support with the spindle resiliently mounted on the base member. A latch mechanism retains the spindle in non-rotating position.

Lifting rod. John G. Kershaw. USP 2 499 027, Feb. 28, 1950.

A lifting rod for spinning and twister frames has 3 bearing surfaces alternating with 3 flat and smooth surfaces which extend the length of the rod. The passages thus formed between the flat surfaces of the rod and the bearing sleeve of the ring rail permits the fly to escape downwards when the machine is in operation.

Rayon staple spinning and fiber blending possibilities. H. Ashton. *Textielwezen 6*, 19-20, 23-6, 29-30 (July 1949); *in English.*

This discussion of rayon staple spinning and fiber blending covers the following topics: length of staple/yarn strength; filament denier/yarn strength; staple length/filament denier/yarn count range; new methods of sliver making; extension of high draft technique to long staple. Fiber blending possibilities discussed include: viscose/cellulose acetate staple, viscose/protein, viscose/nylon, viscose: spun-dyed colors, viscose/cotton, viscose/wool, and viscose/ramie.

Ring spinning apparatus. Edmond R. J. Dufond. USP 2 499 342, Feb. 28, 1950.

The present invention uses the rotation of the spindle or bobbin itself to apply accelerative force to the traveler so that no longer is dependence placed on the yarn alone. This arrangement largely negates the effect on the spinning process of the weight or mass of the traveler which, in the case of this invention, for all practical purposes has zero mass. With this has been combined means for adjustably retarding the rate of rotation of the traveler, whereby providing, in effect, adjustable mass or weight.

Spindle and bolster and lubrication means therefor. Elvin B. Robinson & Jack C. Costner (1/3 to Arnold W. Kincaid). USP 2 499 075, Feb. 28, 1950.

This invention provides an improved spindle and bolster in which the spindle is provided with a spiral vane or screw for forcing the lubricant downwardly in the bolster with means provided whereby the lubricant after passing out of the lower portion of the bolster will be returned upwardly to the upper portion of the spiral vane the spindle and thus not only will circulation of the lubricant be provided, but the pressure created by the spiral vane on the spindle will cause the spindle to rise off its bearing slightly at its lower end and thus not only lower the pressure built up in the lubricant in the spiral vane, but will also allow the lubricant under the force of such pressure to flow between the lower end of the spindle and its bearing and return through a suitable passageway to the upper portion of the spiral vane on the spindle.

Spinning of woolen yarns. Anon. *Fibers 11*, 55-6 (Feb. 1950).

Spinning of woolen yarns on a frame is discussed. The advantages claimed for this method of spinning are lower labor costs and higher production as compared to mule spinning. A description of frame spinning is given as are descriptions

of the twister tube, large package spinning, and drafts in woolen spinning.

Suction cleaning device for spinning machines and the like. Meinard F. Thoma (to Tremont Worsted Mills, Ltd.). Can. P. 455 753, Apr. 5, 1949.

A device for collecting and removing broken ends in machines for performing a textile operation on roving, comprising in combination cooperating rolls for passing roving therebetween, a suction element extending longitudinally of the rolls, the element being connected to a source of suction at one end and closed at its other and providing a continuous longitudinally extending slot of irregular form having portions extending parallel to the roll surfaces for collecting and removing broken ends from the rolls, and other portions offset with respect to the first-named slot portions for removing loose fly, lint and other waste material resulting from the textile operation.

Textile spindle slide mounting. John K. Cochran (to The Marquette Metal Products Co.). USP 2 497 866, Feb. 21, 1950.

A suitable sliding surface for a spinning mounting which will prevent excessive corrosion and reduce it to a minimum. Refers particularly to USP 2 497 865 above.

Textile spindle mounting. Herbert Gleitz & Chas. E. Miller (to The Marquette Metal Products Co.). USP 2 497 881, Feb. 21, 1950.

A simple, efficient and wear-resisting mechanism whereby the spindle assembly may be easily moved from its normal band-driven position to a non-driven position with respect to the driving band, and releasably latched in the latter position.

Viscose tow to yarn process used by Longleaf Mills. Alexander R. Davis, *Rayon & Syn. Tex. 31*, 51-3 (Apr. 1950).

Longleaf Mills, Inc., Matthews, N. C., is producing a new type yarn, sometimes called "direct spun yarn", from viscose tow of approximately 4400 total denier, 1.5 denier per filament. The tow, supplied by DuPont, is of the Cordura, or high-tenacity type. The spinning frames are standard except for the drafting element and creel. The tow, which is carried forward by a leather apron in the drafting element, is broken at random between the front and back rolls. If the front rolls are set 12 in. from the back rolls and a random break is achieved the average staple length will be approximately one-half that distance or 6 in. The yarn produced by this process is uniform, and has an average breaking strength twice that of combed cotton. It has relatively high shrinkage, due, undoubtedly, to the stretching of each filament to its breaking point. Normal shrinkage of this type of yarn in dyeing or finishing is approximately 11%. Due to the special characteristics of this yarn, it is being used for a number of special applications, such as puckered taffetas and an Air Force rain wear fabric. The hand of fabrics made from this yarn more nearly approaches that of silk than conventional spun rayon. The fiber, being of the Cordura type, is somewhat more difficult to dye uniformly than regular tenacity viscose staple.

Wet spinning of textile fibers. Erle V. Painter, Jr. (to Fabric Research Laboratories, Inc.). USP 2 493 359, Jan. 3, 1950.

The method of spinning textile fibers which comprises drafting a traveling roving strand of textile fibers in a drafting zone to elongate the strand and reduce it to suitable size for spinning, applying a liquid treating medium to the drafted, dry, untwisted strand after it has left the drafting zone, and then immediately twisting the wetted, drafted strand.

Winding and spooling B 5

Automatic bobbin winding machine. Wm. E. Hendricks (to Whitin Machine Works). Can. P. 455 772, Apr. 5, 1949.

In an automatic bobbin winder of the kind in which the yarn is attached to the bobbin for winding by being pinched between the end of the bobbin and a chuck, means for removing the scrap end thus produced comprising a knife-carrying member provided with means for advancing it toward the bobbin after winding has commenced and a sharp-pointed knife having a smooth non-cutting edge just back of its point and mounted on the member so that any contact of it with the bobbin is by the smooth edge rather than the point, the knife being located to intercept and cut the yarn on the bobbin where it is slightly spaced from the surface thereof.

Bobbin. John M. Cramer. USP 2 499 989, Mar. 7, 1950.

A bobbin which is adapted to turn about an axis of rotation extending longitudinally thereof, the bobbin comprising a substantially cylindrical barrel member, a top-end on the upper end of the barrel, a base-end on the lower end of the barrel, and means interconnecting the top-end and barrel and the base-end and barrel, the base-end

being of progressively diminishing weight toward the peripheral portions thereof and the material of which the top-end is made being considerably heavier than that of which the base-end is made.

Bobbin marking machine. Hans J. Theiler (to Whitin Machine Works). USP 2 501 106, Mar. 21, 1950.

In an automatic bobbin winder, the combination with the winding head and a chute for catching the bobbin, of a marking assembly associated with such chute to receive the bobbin end first therefrom and including a pressure-sustaining element and a bobbin driver to press the bobbin against the element to establish a traction grip upon the butt of the bobbin as well as upon the yarn mass, and to follow the longitudinal contour of the bobbin, thereby to propel it through the marking assembly, a pigment-carrying marking element substantially at the side of the pressure-sustaining element, a spring for holding the pigment-carrying marking element in firm rubbing contact with the bobbin while so propelled, and a driver for actuating the bobbin driver.

Flyer for double twist machines. Ernest Cotterill (to Courtaulds Ltd.). USP 2 499 726, Mar. 7, 1950.

A flyer for mounting at the end of a bobbin in double-twist spindle apparatus for twisting yarn comprising a thin disc of shallow-disc-shape, part of the edge of which is cut away, the disc having a central opening for mounting it on a bobbin so that it can be rotated freely relatively to the bobbin and a thread guide in the form of a wire clip fixedly clipped on the edge of the disc at the part which is cut away so that the eye is just within the periphery of the disc.

Flyer for spinning frame. Arthur D. Ickringill (1/3 to Ira Ickringill & Co., Ltd.). USP 2 500 827, Mar. 14, 1950.

A yarn spinning and twisting device is provided with a tabular rotatable flyer. The flyer is mounted in a bearing which has an axial passage for the yarn. Guides are provided at the upper and lower ends of the flyer for guiding the yarns. The yarn passed through a selected upper guide passes a distance over the periphery of the flyer and through a lower guide toward the axis of the flyer.

Holding device. Wm. Carter & Wm. T. Clark. USP 2 500 116, Mar. 7, 1950.

A device for holding a rayon cake for unwinding which has an inflatable member adapted to fit within the cake.

Quality winding techniques for synthetic yarns. Karl H. Inderfurth. *Rayon & Syn. Tex. 31*, 72-4 (Mar. 1950); 65-7 (Apr. 1950).

See TTD: *6*, 836.

Textile cone. Chas. K. Dunlap (to Sonoco Products Co.). Can. P. 456 058, Apr. 19, 1949.

A textile cone adapted to serve as a supporting core for a yarn package wound thereon comprising a paper body having a winding surface conditioned with discrete, extending fibers to secure the inner windings of the yarn package against slippage on the paper body during winding and subsequent use of the yarn package.

Tire-cord uniformity improved by variable stretching. Walter M. Scott. *Textile World 100*, 153, 242, 244 (Feb. 1950).

This is a description of a tire cord stretcher developed at the Southern Regional Research Laboratory. It utilizes the principle of constant tension by weight and a variable rate of stretching. The device attaches to a conventional tire-cord winder, and consists of 2 V-grooved cord-gripping sheaves and a weighted dancer roll suspended below and between the sheaves. The stretcher can remove up to 17% elongation from the cord. Tests indicate that cord stetched on this device is more uniform than capstan-stretched cord.

Winding machine. Irving W. Day (to Universal Winding Co.). Can. P. 457 746, June 28, 1949.

In a winding machine, rotatable winding spindle for supporting a winding package, a drive-roll adapted to contact the package to rotate the winding spindle and to recede therefrom with the growth in the winding, a cam arranged in parallel relation to the winding spindle and initially positioned in close association therewith, a mounting provided with bearings for the cam and movable relatively to the winding spindle to adapt the cam to recede therefrom with the growth of the package being wound, means for connecting the winding spindle to drive the cam, and means reciprocated by the cam to traverse the yarn longitudinally of the winding spindle.

Winding machine. Ernest R. Swanson (to Universal Winding Co.). Can. P. 457 747, June 28, 1949.

An improved tension-device comprising a pair of opposed tension-discs mounted to rotate with their axes in eccentric relationships, and means for resiliently applying pressure thereto to cause

the discs to bear against a yarn feeding between their opposed faces.

Yarn fastening means for spools. Roy M. Hood. USP 2 501 515, Mar. 21, 1950.

This invention provides in an uptwisting spool and the like having a barrel portion and 2 head portions, a disc member resiliently pressed against the exterior surface of one of the heads and the yarn end is adapted to be passed between the resiliently mounted disc and the surface of the spool head to clampingly hold the same in position and the resiliently mounted disc having one or more inturned barbs which are adapted to cut the extending end of the yarn as it is clamped in position.

Yarn processing B 6

Apparatus for tensioning strands. Frank Taylor (to Thos. Taylor & Sons, Inc.). USP 2 499 888, Mar. 7, 1950.

Apparatus for transferring rubber threads under tension to point of use.

Faults in folded [plied] yarns. F. Bottomley. *Textile Weekly 45,* 474, 476, 478, 480, 482 (Feb. 24, 1950).

The various doubling processes are summarized briefly and the faults that are likely to be caused at each process and their causes are discussed.

Latching device. Henry J. McDermott (to Am. Viscose Corp.). USP 2 497 267, Feb. 15, 1950.

A latching device for releasably retaining plate covers on rayon cakes during unwinding thereof.

Machine for equalizing tension in rubber threads before feeding the threads to thread covering machines. Anthony Schiappa (to Moore Fabric Co.). USP 2 501 413, Mar. 21, 1950.

An improved mechanism is provided for equalizing the thread tension in a bunch of rubber threads just prior to delivery of the threads to a set of covering spindles.

Method of and apparatus for drying. Harry A. Kuljian. USP 2 501-776, Mar. 28, 1950.

An improved apparatus for, and an improved method of, drying or otherwise treating a yarn, with the yarn moving, single-file, through a high-frequency electric field, as distinguished from subjecting a spool or cake of yarn to the action of a high-frequency electric field.

Method of making pile yarns. Robt. C. Allison (to Alexander Smith & Sons Carpet Co.). USP 2 499 444, Mar. 7, 1950.

A process for preparing highly twisted wool yarns which when formed into a cut pile of a pile fabric intended for hard wear the twist will be substantially fast to aqueous treatment, which comprises forming a highly twisted stock dyed wool yarn in which the pores, the intermicellar spaces and the micellar structure of the wool are at least saturated with moisture, setting the twist by steaming the yarn, during the steaming treatment maintaining the moisture content in the yarn at at least that which saturates the pores, the intermicellar spaces and the micellar structure of the wool, and reacting the steamed yarn with an aldehyde.

Nylon can raise wool spinning limits. R. D. Bennett. *Textile World 100,* 125-27, 244, 246, 248 (Feb. 1950).

Woolen and worsted yarn size is limited by factors in weaving. Threads with supports that are later removed, such as alginate rayon or cotton, result in sleazy fabrics. Nylon either as filament or cut staple, can be used as a permanent support. Filament can be either plied or used as a core yarn. Staple blended with wool results in an increase of 3% in strength for each 1% of nylon. Details of tests made and recommendations as to twist and blends are given. Tables showing comparative tests, count and tenacity expectancies, relative shrinkage and wear factors, and strength obtainable are given.

Processing of nylon yarn. I-II. H. Marsden. *Textile Mercury & Argus 122,* 345, 347, 349-50, 352 (Mar. 3, 1950);385-86, 389-90 (Mar. 10, 1950). **Nylon yarn processing. I-III.** H. Marsden. *Textile Weekly 45,* 540, 542, 544 (Mar. 3, 1950); 596, 598, 600, 602 (Mar. 10, 1950); 668, 670, 672 (Mar. 17, 1950).

The present techniques of American practice in the processing of nylon yarns is discussed. Included in the discussion are types of yarn, sequence of operations, winding uptwister spindle bobbins, uptwisting, traverse mechanism, twist setting, "four-wind" on size tube, yarn path, sizing roller drive, size circulation system, isolation valves, size viscosity control, automatic viscometer, lagging in sizing room and coning room, pineapple cone, pressure and tension during build, uniformity, development trends, infrared lamps, preshrinking in hank and package, and monofilament.

Shock-resistant filament guide. Arthur K. Seemann (to Dominion Oxygen Co., Ltd.). Can. P. 456 538, May 10, 1949.

A filament guide comprising a support, a flexible coupler having one end secured to the support and an opposite end projecting therefrom, at least the opposite end being a sleeve, and a wear resistant filament guiding device having a portion fitting within the sleeve at the opposite end, the guiding device being freely movable with the coupler.

Special yarns B 7

Impregnated yarn and fabric formed thereof. Walter R. Hoover (to Dominion Rubber Co., Ltd.). Can. P. 457 233, June 7, 1949.

A resin impregnated textile strand that is non-moisture absorbent throughout to a high degree and has good flexing properties and is highly resistant to abrasion and to the action of solvents, oils, acids and alkalies, comprising a yarn that is deeply impregnated with a non-brittle, tough, horny, low-pressure, thermosetting, polymerizable resin without the same accumulating on the outer surface of the yarn sufficiently to interfere appreciably with the flexibility of the yarn, and wherein the impregnating resin is polymerized in situ in the yarn from an anhydrous liquid to a solid without the formation of any by-products or loss of weight, so that the entire surface of the yarn is deeply penetrated by the solidified resin and is thereby well protected and firmly anchored in place.

Yarn products B 8

Adhesion of rubber to fibrous materials. Fred S. Perkerson (to Callaway Mills Co.). USP 2 486 720, Nov. 1, 1949.

According to the invention, the fibrous materials, such as cotton or rayon fabrics or cords used in tire construction, are subjected to esterification of the fibers with alpha-beta unsaturated carboxylic acids or their anhydrides, halides, etc., prior to the application of the vulcanizable rubber compositions thereto. A considerable increase in bond of rubber to the esterified fibers is thus obtained on vulcanization.

Bonding of rayon filaments to rubber. Donald Entwistle (to Courtaulds Ltd.). USP 2 502 406, Mar. 28, 1950.

A composite article comprising vulcanized rubber and continuous-filament, regenerated cellulose cords embedded in the rubber, the cords having an alkaline-soluble, fusible, resinous condensation product of a phenol and sulfur uniformly distributed throughout each filament of the cords whereby the adhesion between the rubber and the cords is improved.

Covered and coated cord and fabric. Wm. Whitehead (to Celanese Corp. of Am.). USP 2 500 332, Mar. 14, 1950.

Cords for use in preparing fabrics, comprising substantially parallel core threads, each composed of adhesive-treated threads slightly twisted together and containing a plurality of continuous stretched and saponified organic acid ester of cellulose filaments having at most a slight twist, and a sheath of threads braided over the core threads.

As common as a spool of thread. Anon. *Rohm & Haas Reptr. 8*, 20-4 (Mar. 1950).

This is a description of the textile processes involved in the manufacture of sewing thread.

FABRIC PRODUCTION C

Yarn preparation C 1

Four new trends in slasher controls. *Textile World 100*, 137, 246 (Mar. 1950).

(Based on a paper by L. E. Cuckler.) 1. Automatic water-level control in size cooking prevents variation in water level that will affect the finished product. 2. Constant slasher-speed regain control changes dryer temperature while keeping speed constant and keeping regain constant. 3. Size-viscosity measurement, recording and control is done continuously. 4. Pneumatic squeeze-roll loading permits finger-tip control of roll pressures. Each of these developments is described briefly.

Monsanto's new experimental slasher. Anon. *Can. Textile J. 67*, 54 (Mar. 31, 1950).

The new experimental slasher developed by Monsanto Chemical Co. is described briefly.

Quality control of slashing and weaving through methods and systems of inspection. Anon. *Textile Bull. 76*, 59-60, 62 (Mar. 1950).

This is an abstracted stenographic report of the discussions of the Eastern Carolina Division of the Southern Textile Assn. on the methods and systems of inspection used in quality control of slashing and weaving.

Small-scale slashers for experimental purposes. Anon. *Textile Bull. 76*, 68, 70-1 (Mar. 1950).

Descriptions are given of 2 recently developed experimental slashers, 1) the Callaway slasher and 2) the Monsanto slasher. 1) The Callaway slash-

er produces a full width warp of any possible number of ends per inch and total number of ends from a minimum quantity of yarn and with a minimum of waste, time and cost. It takes its yarn supply from individual packages such as cones, tubes or cheeses, and delivers a sized warp ready for the loom with as little as 15-20 lbs. of yarn. The slasher functions equally well on cotton, synthetics, worsted, wool and silk yarn and combinations of these. Warp treatments may be evaluated by putting 2 or more treatments on the same warp at the same time and weaving them on the same loom at the same time. For example, on a warp of 3,000 ends, 1,000 ends can be treated with Compound A, another 1,000 with Compound B, and still another 1,000 with Compound C and weaving results tested without the variables involved when different looms are used or when tests are run at different times. The drying chambers contain provision for hot air, cylinder, and infrared drying, which may be utilized separately or in combination. 2) The Monsanto slasher is designed for testing synthetic sizing agents, e.g., Stymer S, Monsanto's chemical aid for sizing acetate warps. The experimental slasher is provided with numerous controls which afford great latitude in control of normal variables. Sized yarns treated with the tested material are examined for tensile strength, elongation and size content, and microscopically in cross-section to assess penetration. Abrasion tests are run on a cohesion tester, single end yarn abrader and the dynamic heddle abrasion tester.

Two ways to test warp sizes. Anon. *Textile World 100,* 124, 125, 127 (Mar. 1950).

The Monsanto pilot plant slasher, designed as an experimental machine, consists of size box, immersion roll, squeeze rolls, 5 drying cans, lease rods, reed and take-up beam. Size box is thermostatically controlled; the drying cans, of stainless steel, may be individually controlled. The machine will handle warps with from 1 to 300 ends at speeds of zero to 15 yds. per minute. The Callaway slasher will handle any number of ends per inch or total number of ends of cotton, synthetics, worsted, woolen, or silk yarns. No warping or beaming is required. The yarn is slashed and put on the beam in sections; the take up drive and beam holder being so arranged that it can be readily shifted for the next section. The drying section provides for hot-air, cylinder, and infrared drying or any combination of these. Speeds range from zero to 40 yds. per minute.

Tricks speed nylon tying and quilling. H. E. Wenrich. *Textile World 100,* 147, 233, 234 (Feb. 1950).

More care is needed in brushing fine-denier nylon ends being readied for tying. Light sizing results in a tendency for the ends to open during knotting. The twisting machine is preferred by some for warps with little or no size. A minimum of brushing will reduce split ends and also time spent on the warp. Loom downtime is reduced by doing the tying-in away from the loom. Nylon filling can stretch while being wound and not be noticed until after dyeing. Multiple shuttle looms are often used to reduce the danger of filling streaks. Oiling of the filling is sometimes necessary and is done on the winder.

Weaving C 2

Automatic stop for looms. Wm. V. D. Poindexter. USP 2 501 915, Mar. 28, 1950.

A harness stop motion adapted to be disposed beneath the harness of a loom and connected to the conventional stop motion thereof so as to automatically stop the loom when the harness cord breaks.

Barker top shedding motion. H. K. Munkebo. *Tids. Textilteknik 8,* 48 (Mar. 1950); *in Danish.*

A description is given of the Barker Top Shedding Motion which is applied for weaving fabrics with a considerable number of ends per inch, e.g., shirting poplins, cotton coats and cambrics, and which results in a smaller wear on the yarn and consequently in a smaller number of breaks in the warp.

Bemberg fabrics. Anon. *Melliand Textilber. 31,* 20-1 (Jan. 1950); *in German.*

Typical rayon fabrics known as Bemberg have been evolved in the course of time on the basis of the special textile properties of "Bemberg" cuprammonium rayon yarn. These fabrics are chiefly the well-known garment prints known as "Bemberg Lavable" and the "Bemberg Oriental" quality for printed underwear (Mille Fleurs) and single-shade pastel, as well as "Bemberg-Toile" in single-shade and prints for underwear and blouses. "Bemberg Durete" warp has proved to be particularly well adapted for hard wear when used for definite types of consumers' goods, such as garments for women and children, frocks, aprons, shawls and so on. It is manufactured as a continuous rayon yarn and supplied to the trade in the form of finished sized warps, which means

a notable relief for the preparatory departments of many weaving mills.

Bobbin apparatus for automatic looms. Rudolf Hrdina. USP 2 499 502, Mar. 7, 1950.

In a bobbin feeding device for looms, the combination with bobbin changing mechanism of a bobbin storage container and a movable securing means for the free ends of the bobbin threads, a guide means disposed at a distance from the container and guiding the free ends of the bobbin threads to the securing means, and means permitting movement of the securing means towards and away from the container in synchronism with the bobbin charging mechanism of the loom, whereby the thread ends of all the bobbins are slackened and remain slack during the bobbin exchange operation and by a return movement of the securing means the thread ends of all the bobbins are again tensioned.

Checking device for the warp thread in circular looms. Christian Christiansen & Gustav O. K. Rusch. Can. P. 456 253, May 3, 1949.

Checking device for the warp threads in circular looms, characterized therein that it comprises one or more drums or rollers over which the threads are passed and which are adapted to be stationary when the threads are pulled forward at the opening of the lease, whereby the threads are subjected to a checking effect by sliding on the drums or rollers, but may rotate under the action of the threads when these are running backwards at the closing of the lease.

Continuous path gripper shuttle loom. Vilem Werner & Karel Kubelka (1/3 to Zbrojovka Brno, Narodni Podnik, also named Brno Arms Factory, Nat'l. Corp.). USP 2 493 515, Jan. 3, 1950.

An improvement in an automatic weaving loom comprises a reed, a stationary mounted weft bobbin, a driver continuously in an endless path leading through the shed, a thread catcher attached to the driver, and a stationary thread feeder in front of the shed in the direction of the driver movement. The thread feeder holds the free end of the weft thread and cooperates with the catcher. A stationary seizing device is provided behind the shed with means to free the thread end from the catcher and to release it before the action of the reed. A thread cutting device is also provided near the feeder.

Crepe fabrics; latent energy in fibers and yarns. A. J. Hall. *Fibres 11,* 41-2 (Feb. 1950).

In the manufacture of crepe fabrics highly twisted stabilized yarns which can be made to give up their latent energy at the proper time are required. Also required is a balanced texture and a specific construction. Other topics discussed in this article are the method of yarn energy release, the creping process, causes for creping irregularities, and methods for the control of creping.

Design and production of dress fabrics with fancy yarns. I & III. A. T. C. Robinson. *Silk & Rayon 24,* 95, 97-8, 100 (Jan. 1950); 380, 385, 386, 388 (Mar. 1950).

Part I of this discussion covers the following topics: ways of using fancy yarns, types of fancy yarns, mechanical devices, bouclettes and bouclés, the fancy twisting operation, the binding operation, bouclé and gimp yarns compared, bouclette fabrics, armoured bouclette, a pin-stripe chevron bouclette, and acetate and worsted bouclette. In Part III the discussion is concerned with: slubs and flakes, combined spots and slubs, a novelty crepe, a slub marocain, a corkscrew slub satin, figured spot satin, bouclette with slub overcheck, spot bouclé overcheck, patterning, and weaving fancy yarns. For Part II see TTD: *7,* 279.

Device for removing waste yarn from bobbins. Elmer C. Alix & Harry A. Wilson. USP 2 499 810, Mar. 7, 1950.

A device for removing residue yarn from a bobbin comprising the combination of a receptacle for receiving the bobbin when ejected by a loom, the receptacle having a vertically disposed guide channel in a side wall thereof with the upper end edges of the channel portion being in divergent relation with each other for receiving and directing the yarn trailing from the ejected bobbin inwardly of the channel, a pair of roller members positioned adjacent the receptacle and having vertically engaging surfaces positioned adjacent and substantially parallel with the guide channel and between which the yarn disposed in the guide channel is adapted to be directed and means for rotating the roller members in a direction such as to cause the yarn to be withdrawn from the bobbin through the guide channel.

Dobby weaving. H. Franz Reichel. *Melliand Textilber. 31,* 99-104 (Feb. 1950); *in German.*

1. General explanation of the method of card cutting for the Hodgson dobby loom. 2. Differently colored cardsheets for the upper and lower knife motion. 3. Pattern design altered by action of the lower knife sheets on the upper knife motion and vice versa. 4. Symmetrical suspension of the

weave shafts makes it possible to produce a second weave by reversing the dobby card on the cylinder. 5. Explanation of the development of weaving technique arising therefrom. 6. Examination of the weaving results achieved with 8 different positions of the card. 7. Unambiguous registration of the cards to maintain control of the stock of weaves at disposal. 8. Eight possibilities of utilizing a card in 4 different weaves permits the creation of a large variety of weave and color effects.

Enumeration problem in textile design. I-II. S. A. Shorter. *J. Textile Inst. 40,* T189-99 (Mar. 1949); T735-48 (Nov. 1949).

Part I deals with certain fundamental conceptions essential to an adequate theory of the "cycle of steps", or in its simplest form an "elementary design"—a design in which, on any one pick, only a single warp thread is raised within the weftway repeat, and any particular warp thread is raised only once within the warpway repeat. The theory developed was applied to the solution of the problem of "enumerating" the elementary design, using the term to denote the finding and application of formulas for the calculation of the number of designs of any period. Part II deals with the relation between the elementary design and primitive pattern (to be cont.).

Fabric. Ralph H. Cutler (to Raycrest Mills, Inc.). USP 2 501 213, Mar. 21, 1950.

A woven cord fabric for summer suitings having a warp consisting of groups of cotton threads alternating with groups of fast-dyed rayon filament threads and a filler consisting of heat-treated nylon filament yarn passing over and under the groups of cotton threads and over and under the rayon threads individually.

Harness motion for looms. Carl D. Brown & Edw. C. Nichols (Draper Corp.). USP 2 501 157, Mar. 21, 1950.

In a loom having loomsides and a 2-ended harness frame, means located entirely at the loomsides acting to impart retractive movement to the harness frame and comprising in combination: a casing having an opening and a removable cover, means supporting the casing on a loomside, a sheave sector, means rotatably supporting the sheave sector within the casing, a 2-ended tensioned spiral spring within the casing and one end of which engages the sheave sector to impart rotary movement thereto, an anchorage within the casing engaged by the other end of the spring, and a flexible connector attached adjacent one of its ends to the sheave sector and extending outwardly of the opening and connected at its other end to one end of the harness frame.

Innovations in loom construction. Heinz Hollstein. *Melliand Textilber. 31,* 171-73 (Mar. 1950); *in German.*

This article gives a general survey of the chief improvements introduced in the construction of looms during the last 10 years, special attention being devoted to the models brought out in Switzerland and the U.S.A. The first part of the article mentions improvements in the familiar types of the loom and then deals with completely new designs. The most essential feature in the improvement of the ordinary loom is the device for the movement of the shafts without superstructure in conjunction with automatic pick-finders. The circular looms and the Sulzer weaving machine—2 new loom types—are discussed.

Lay guide. Elvin A. Mastriani & Karol Kulczycki (to The M. W. Kellogg Co.). USP 2 493 634, Jan. 3, 1950.

The lay guide on each side of the lay comprises a pair of intermated relatively movable members, one of which, serving as a stationary guide, is adjustably mounted on the frame structure of the loom, while the other, serving as a follower, is adjustably carried by the lay sword. One of these members has a V indenture or groove, while the other member has a projection or tenon of corresponding cross-section extending into the groove with a snug, conforming, relatively movable fit. The follower member has a swivel or rotative mounting on the lay sword to permit the follower member automatically to accommodate itself angularly to the stationary guide member in accordance with the angular position of the lay sword.

Loom. Max Pääbo. Can. P. 457 609, June 28, 1949.

In a pneumatic loom having a reciprocating lay, the combination comprising a frame, means mounted on the frame for delivering a weft thread from a supply thereof, stationary jet means for blowing the weft thread through the warp shed with compressed air and means for cutting the weft thread at the entrance of the shed.

Pile fabrics possible from ordinary box looms. Arthur Johnson. *Textile World 100,* 131, 133, 242, 244, 246 (Mar. 1950).

The great degree of shrinkage possible from Vinyon fibers can be used to produce novelty fabrics. By alternating Vinyon and cotton or other yarns in the warp or filling, then in the treatment of

the fabric treating the Vinyon so that it shrinks, the other yarn will be forced into a pile effect. Vinyon can also be used to produce a novelty yarn by plying it with cotton then shrinking it by heating it above 60°C.

Pneumatic thread holder for weft replenishing looms. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 501 423, Mar. 21, 1950.

In a pneumatic thread holder for the weft ends of reserve bobbins in a weft replenishing loom having a hollow thread collector in which subatmospheric pressures exist, a tube having one end in pneumatic communication with the thread collector, means partly closing the other end of the tube and defining an intake mouth having a smooth substantially straight edge facing away from the bobbins and around which the weft ends bend as they enter the tube, and means within the tube intermediate the ends thereof presenting a serrated edge facing toward the bobbins and placed to engage and bend the weft ends as they extend from the intake mouth to the thread collector and effective to resist movement of weft ends within the tubs toward the intake mouth.

Shuttle box for looms. Anthony H. LaFreniere (to LaFreniere Research Corp.). USP 2 501 394, Mar. 21, 1950.

In combination in a loom, a shuttle box having front and rear walls, the front wall being pivoted substantially midway between its ends to turn about a vertical pivot, one end of the wall being shaped to constitute a shuttle retainer which constricts the shuttle path after the trailing end of the shuttle has passed the retainer in entering the box, thereby to prevent rebound of the shuttle, the opposite end of the wall being normally disposed in the path of the shuttle and being engaged by the shuttle and forced forwardly by the latter before the shuttle contacts the picker, and a spring normally urging the latter end of the wall toward the opposite wall of the box.

Self-threading shuttle. Starling I. Bright. USP 2 493 568, Jan. 3, 1950.

An improved construction of side delivery eye for the shuttle which prevents catching of the thread between the side flange of the threading block and the wall of the block receiving chamber.

Shuttle binder box. Wm. R. Taylor, Jr. USP 2 498 970, Feb. 28, 1950.

Means for improving the action of the shuttle binder box of a loom by the provision of an auxiliary holding spring or yieldable stop for the swinging side bar of the box and adjustably mounting the holding spring so that it will become effective at the desired angle of swing of the side bar.

Side slipping weft detector. Albert Cederlund (to Crompton & Knowles Loom Works). USP 2 500 518, Mar. 14, 1950.

A side slipping weft detector for the weft bobbin of a loom includes a base having a pivotal flat detector lever mounted on it. The lever has front and back lugs with a recess between them. The detector finger is slidably mounted through the lugs and recess. A spring surrounding the detector finger acts to urge it rearwardly.

Single lift, center shed and Blackburn dobby. W. Middlebrook. *Textile Mfr. 76*, 119-21 (Mar. 1950).

The operation of single lift, center shed and Blackburn dobbies is discussed and illustrated with diagrams.

Take-up mechanism for looms. Carl F. Libby. USP 2 501 777, Mar. 28, 1950.

A take-up mechanism for looms, comprising a supporting frame, a driven feed roll journalled on the frame, an auxiliary frame rockably mounted on the supporting frame, a second feed roll journalled on the auxiliary frame and movable therewith toward and from the driven roll, a guide roll journalled on the auxiliary frame in position to receive a loop of fabric from the loom before the fabric reaches the driven roll, a weight roll loosely supported by the auxiliary frame to bear on the second feed roll, and meshed gears on the weight roll and second feed roll.

Towels. Helmut Hamann. *Melliand Textilber. 31*, 18-19 (Jan. 1950); *in German.*

The present article deals with the technical properties in connection with the manufacture and weave of towellings, covering not only plain and striped towels but also those with colored designs and made of pure and half linen, cotton, staple fiber and mixture yarns marketed under the names of drill towels, glass towels, huckaback and jacquard towels. Eight original designs of towels with colored designs accompany the article, 2 of them giving the calculation of the width, number of picks and ends per inch, draft, warping sequence, number of threads per dent and material for each 20 shafts, as well as 6 point-paper designs for crepe weaves for 8, 10 and 12 shafts.

Uneven spacing of reed wires. I. Laird. *Textile*

Textile Mfr. 76, 129-33 (Mar. 1950).

In a previous article (see TTD: *7,* 286) the inspection of reeds by photographic means, including the method and apparatus for making contact prints, was discussed. The present paper enlarges on the previous discussion and describes a reflex-photographic method, and inspection by superimposing reeds.

You can stop crooked filling patterns. Eugene P. Schremp. *Textile World 100,* 116-17 (Mar. 1950).

Points that can be checked to avoid having crooked filling are: 1) tension of the yarn on the loom beam, 2) beam holders, whip roll, and other loom conditions, 3) temples, same on both sides, 4) take-up roll the same on both ends, 5) finishing operations; match filling pattern before sewing pieces together, 6) start cloth evenly at tenter and dryers, and 7) start cloth straight in semi-decaters or rotary presses.

Knitting C 3

Apparatus for applying decalcomanias to hosiery. Jas. A. Ruth. USP 2 501 539, Mar. 21, 1950.

A machine for applying decalcomania indicia to hosiery whereby a heated roller causes the decalcomania indicia to be transferred from a roll of tape onto the stockings.

Computing the designs of multisystem patterns. Lorenz Friedl. *Melliand Textilber. 31,* 22-5 (Jan. 1950); *in German.*

The author points out the restrictions imposed on tuck patterns for constructional reasons and lays down the relation between the height of design H and the index of rise X of multiple-system designs, on the one hand, and the index of rise x and the height of design h of single-system designs, on the other hand. Examples are given to explain the process of computing the designs of multi-system patterns.

Construction sheets—valuable knitting records. Lawrence Levy. *Textile World 100,* 118-19 (Mar. 1950).

Adequate and accurate records of fabric construction when making samples saves time later on when it is necessary to duplicate the fabric. Typical style and construction record forms are shown. The steps to follow in analyzing, determining and recording the information necessary for duplication of the fabric are explained.

Device for circular knitting machine. Chester P. Berg (to Macungie Hosiery Mills). USP 2 500 337, Mar. 14, 1950.

A device for use in connection with circular knitting machines is provided for applying tension to the yarn when the yarn is not being knit, and for relieving tension on the yarn when it is being knit.

Drive for the axial motion of the camshaft on ordinary straight-bar knitting machines. Ubaldo Pianta (to Societa Italiana Ernesto Breda Per Costruzioni Meccaniche). USP 2 499 679, Mar. 7, 1950.

Means to effect axial movement of the cam shaft of a straight bar knitting machine, the means including a cam disc fixed on the cam shaft, camming ribs extending from opposite sides of the disc and extending concentric to the cam shaft, a member mounted for movement toward and from the cam shaft radially thereof, the member being aligned opposite the cam disc, and a pair of rollers mounted on the members, on opposite sides of the cam disc, and selectively engageable with the camming ribs.

Dyeing and finishing of nylon hosiery. Anon. *Tech. Bull. (DuPont) 6,* 10-15 (Mar. 1950).

This is a review of hosiery processing and practical suggestions are given for improving quality. Subjects discussed are: preboarding nylon hose, scouring and dyeing women's hosiery, obtaining improved unions, finishing women's hosiery, nylon in men's and children's hosiery.

Elastic garment and method of making them. Norman B. Reed (to Surgical Products, Inc.). Can. P. 456 459, May 3, 1949.

A seamless fashioned knitted garment wherein variation in diameter is a concomitant of variation in stitch length, the garment having an elastically stretchable portion wherein knitted stitches each comprises inelastic yarn and an elastic yarn, the elastic yarn comprised in each stitch being under an initial tension when the garment is in non-distended condition, the length of elastic yarn per stitch bearing a varying relation to the length of inelastic yarn in the corresponding stitch throughout the elastic portion of the garment.

Elimination of fly in flat knitting frames. Wilhelm Busch. *Melliand Textilber. 31,* 104-06 (Feb. 1950); *in German.*

The author deals with the formation of fly in flat knitting frames and its deposition there, and describes the resulting drawbacks in the production of knitted goods, to get rid of which he proposes the use of an automatic device that can be made in

the mill itself and continuously removes fly from the needle bed combs of flat knitting frames. It consists mainly of a couple of brushes to be attached to the holders of the brush latch openers in such a way as to allow them to pass steadily over the needle bed combs while the machine is in operation and keep these combs free of fly. A few sketches show the arrangement of the device.

Full-fashioned needle settings. Jas. Walton, Jr. *The Knitter 14*, 24, 26, 28 (Apr. 1950).

The importance of correct settings for full-fashioned needles is stressed and the proper setting of needles is discussed in some detail.

Full-fashioned stocking and process of producing the same. Emilio Doura. USP 2 500 631, Mar. 1950.

The process of producing a stocking for women which includes knitting yarn to form a leg part, continuing knitting the yarn to form a foot including knitting reinforcing yarns along each edge, the edge including an unreinforced widening zone of about 10 courses of leg yarn and a narrow reinforced zone of the 10 courses between the reinforced area and the front of the foot, cutting the unreinforced zones, transferring the stocking to the needles of a footer machine, knitting the heels on the machine, linking the inner edge of each heel to the edge of the narrow reinforced zone to form a short seam, and thereafter linking the remainder of the heel edge to the reinforced edge at the bottom of the unreinforced zone to continue the short seam at another angle, and form a topping corner with it.

Knitted jacquard fabrics. Welhelm Busch. *Melliand Textilber. 31*, 175-78 (Feb. 1950); *in German.*

The present trend in fashion in jacquard fabrics knitted on flat and circular knitting frames is considered and a few combinations of shades are discussed. Then follow a few drafts for jacquard knitting patterns for which there has recently been a demand, accompanied by the corresponding point paper designs.

Link-link knitting machine. Wildt & Co., Ltd., H. H. Holmes & A. H. Widdowson. Australian P. 136 243, Nov. 19, 1946.

An improvement in knitting machine comprises, means for controlling individually movable elements adapted to cause the elements to dwell suchwise that sliders transferring needles automatically engage the associated elements and are deflected to liberate the needles to be transferred.

Mechanism for repairing and heat-treating repairs of nylon hosiery. Saul Sigel (to M. K. M. Hosiery Mills, Inc.). USP 2 502 031, Mar. 28, 1950.

A mending cup, a goods supporting pad mounted within the cup, and means supporting the pad and carried by the wall of the cup.

Modified circuit improves F.F. machine operation. E. H. Helliwell. *Textile World 100*, 135, 242 Feb. 1950).

Full fashioned machines cut down on their speed when narrowing. If a machine stops at this point, the motor sometimes lacks the torque to restart it. Worcester Polytechnic Institute corrected this by adding a torque controller in the form of a speed relay to the motor shaft. Illustrated with torque curves and schematic diagrams of the circuits.

Pattern mechanism for knitting machines. Albert E. Page & Frank R. Page (to Scott & Williams, Inc.). USP 2 498 092, Feb. 21, 1950.

A pattern mechanism for a knitting machine is claimed with particular reference to the provision of an auxiliary pattern mechanism controlled from the main pattern drum and adapted to secure additional controlling action. The auxiliary pattern device which is added to the main pattern mechaism may serve as the sole control for various elements of the machine or may serve for the joint control of certain elements in conjunction with the main pattern drum.

Patterned knit goods. Lorenz Friedl. *Melliand Textilber. 30*, 290-93 (July 1949); *in German.*

The patterned surface of the goods can be broken up for analysis in the form either of rectangles or of hexagons, the former being made the basis for the derivation of the mathematical relationships. The relations between the number of frame needles, the circumference of the pattern wheel, the width of the design, and the number by which the size is effected are covered by 3 equations and the point paper design developed from the figures found. The same design is developed one time as a plated pattern and a second time as a tuck pattern. The article shows the representation of the tuck pattern according to the Ascher and Schönlinder style.

Shifting drum for Raschel and similar looms. Maurice E. Leblanc (to Societe Anonyme des Tissages Lesur). USP 2 499 656, Mar. 7, 1950.

In a Raschel or the like knitting machine having a crank shaft, a second shaft, a drum system, the

system being shiftable to cause a variation in the knitting of the fabric, the system comprising a sleeve keyed to the second shaft and a drum mounted on the sleeve, a lever pivotally fixed on the frame of the knitting machine for shifting the sleeve longitudinally of its axis, a link-mails carrying drum controlling the lever, and a shaft controlled by the crank shaft for driving the last mentioned drum.

Stocking. Jas. Largman. USP 2 500 759, Mar. 14, 1950.

A full-fashioned stocking having a conventionally knitted foot and heel portion and a longitudinally seamed leg portion, the leg portion being characterized by the provision therein of an ornamental clock formed by knitting with the body yarn of the leg portion an additional yarn of the same color as the body yarn, the body yarn being synthetic and of a denier to render the leg fabric substantially transparent and the denier of the additional yarn being approximately twice that of the body yarn so that the combined yarns forming the clock materially reduce its transparency to render it readily discernible, the cloth being so located in the leg portion of the stocking in spaced relation to the heel and seam portions thereof as to be completely framed by the transparent leg fabric.

Stocking. Albert E. Page (to Scott & Williams, Inc.). USP 2 501 353, Mar. 21, 1950.

A stocking having sheer leg and instep portions knit from a single monofilament nylon yarn with a repeat of stitches 4 wales wide and 8 courses long, the repeat comprising plain stitches throughout except for 4 tuck stitches, one in each wale of each repeat and one in every alternate course of each repeat, the tuck stitches being arranged in diagonal lines through the portions of the stocking, the pattern produced by such repeats being substantially indiscernible when the stocking is worn at viewing distances of more than 3 feet, the portions being substantially proof against runs in a downward direction exceeding 8 courses, and the portions exhibiting substantially reduced sheen as compared with corresponding portions of stockings plain knit from monofilament nylon yarn of similar weight.

Storage and handling of knitting yarns. Chas. Reichman. *Can Textile J. 67*, 56, 59 (Mar. 31, 1950).

This is a discussion of some of the factors involved in proper yarn storage and handling, and suggestions are given on methods of overcoming problems of this kind.

Suction cleaning means for loopers. Wm. R. Bennett, Sr. (¼to Wm. H. Blizzard, ¼ to Wm. R. Bennett, Jr. and ¼ to Coel R. Thompson). USP 2 501 838, Mar. 28, 1950.

In a looping machine having a dial provided with a plurality of looper points onto which 2 ravelled edges of a hose are adapted to be placed for a looping operation, the looping machine having cutting means for cutting the ravelled edges of the hose while on the points, the machine having a rotary brush spaced from the cutting means for removing the cut section from the points, the machine also having a housing partially surrounding the brush, a hood secured over the housing, the hood being substantially wider than the housing and having 3 sidewalls, a top and a bottom and being open on that side which is disposed next to the cutting means, one lateral face of the brush being exposed within the hood, a suction pipe leading from the bottom of the hood below and to one side of the exposed face of the brush and having suction means therein for creating a partial vacuum in the hood to cause air to flow through the open sidewall of the hood and to remove ravelled edges which have been cut from the sections and also to remove particles of ravelled edges which may be adhering to the rotary brush.

Welt-turner settings must be precise. H. B. LeFeaux. *Textile World 100*, 110-11, 115 (Mar. 1950.

Automatic welt turners do in a split second what it takes 5 or 6 minutes to do manually. However, the automatic welt turner will make a little more waste. Welt bars must be occasionally buffed to remove accumulations of size. All loose ends of yarn must be kept off the bridges. Welt hooks must be kept in alignment at all times. The setting must be correct. Many other points on proper operation are given. There is also a series of 12 diagrams showing the functioning of the welt turner.

Special fabrics C 4

Fabric and method of making same. Geo. A. Morgan & Arthur B. Robertshaw, Jr. (to Woonsocket Falls Mill). USP 2 502 101, Mar. 28, 1950.

A composite fabric consisting of 2 plies, each including series of interwoven warp and filling threads and interconnecting "tie" warp threads common to both plies and a separate series of "tie"

warp threads for binding the plies together at the sides, the plies having a plurality of common portions at the sides thereof and common portions across the composite fabric at predetermined intervals.

Fibrous products and process for making them. Carleton S. Francis, Jr. (to Am. Viscose Corp.). USP 2 500 282, Mar. 14, 1950.

In a process for the production of an integral, thick felt-like fibrous product of substantially uniform cross-section throughout, the steps comprising preparing a plurality of relatively thin webs each formed from a mixture of fibers which are responsive to heat to become tacky by heat and fibers which are not rendered tacky by heat, the heat-responsiveness of the heat-responsive fibers in some of the webs being greater than the heat-responsiveness of the fibers in the remaining webs, assembling the webs in superimposed relation to form a composite bat in which the heat-responsiveness of the heat-responsive fibers increases progressively from one surface of the bat to the other surface thereof, and subjecting the bat to heat applied adjacent the less heat-responsive fibers to render the heat-responsive fibers at all portions of the cross-section uniformly tacky and effect a binding together of the non-heat-responsive fibers by the tacky fibers whereever the latter occur within and throughout the product.

Fire suit withstands 2000 degree F flames. Anon. *Aviation Week 51*, 40 (Nov. 14, 1949). (through *J. Home Econ. 42*, 310 (Feb. 1950).

A new fire-fighting suit which permits the wearer to walk through 2000°F and remain in 180°F live steam for several minutes has been successfully tested by the Naval Damage Control Training Center, located in Philadelphia, Pa. The suit is a 5-layer garment composed of wool flannel lining, felted Fiberglas, lightweight Fiberglas as a "vapor barrier", an additional layer of Fiberglas, and an outer cover of noncombustible asbestos. It is designed to overcome most of the limitations of conventional asbestos suits now in use.

Loom. Osborne Firing & Leonard M. Dorman (to Talon, Inc.). USP 2 497 077, Feb. 17, 1950.

This invention provides an improved loom adaptable for weaving narrow fabrics such as tapes, webbing, ribbon, etc., which is capable of considerably higher speeds of operation than looms heretofore used for the weaving of such prodocts. 45 claims.

Manufacture of imitation astrakhan furs. Jokubas Finkelsteinas. USP 2 501 268, Mar. 21, 1950.

Method for the manufacture of imitation astrakan furs consisting in forming without knotting a chenille into loops spaced along its length, binding the loops by means of a thread, and then securing the prepared chenille along its length to a supporting backing, the chenille and thread being both of unlimited length, the thread making at least one turn round each loop and passing continuously from one loop to the other, thereby permitting the looped chenille to be manufactured in a continuous way by means for suitable apparatus.

Papermaker's felt. Raymond J. Lee. Can. P. 456 661, May 17, 1949.

A papermaker's felt comprising a woven and fulled fabric having warp and filler yarns, at least one of the yarns forming a substantial portion of the felt surface and consisting of wool fibers and ramie fibers in such proportions that the ramie fibers constitute at least 5% by weight of the felt but less than will prevent appreciable fulling of the felt.

Process of removal of oil from textile fibers. Gordon H. Wood & Carleton S. Francis, Jr. (to The Felters Co., Inc.). USP 2 501 979, Mar. 28, 1950.

In a method of making felt, the steps which comprise passing a batt which contains wool fibers bearing oily substances thereon through a current of air heated to a temperature at which the oily substances are caused to vaporize and then felting the fibers to form a textile material.

Tufted terry product. Eugene D. Miller (to Callaway Mills Co.). USP 2 499 406, Mar. 7, 1950.

A terry product which comprises interwoven ground warp, and filling yarns forming a fabric from which terry loops project at both faces, and U-shaped tuft yarns having their bights lying at one face of the fabric and their legs extending through the fabric to project from the face, the tuft yarns lying in areas in accordance with a pattern and being held in place by fabric yarns in tight gripping contact with the legs thereof, the projecting portions of the legs overlying and concealing the terry yarns within the areas of the face of the fabric from which the legs project.

Vinyl resin textile article. Theophilus A. Feild, Jr. (to Union Carbide & Carbon Corp.). USP 2 499 477, Mar. 7, 1950.

A textile fabric made of heat treated oriented

synthetic textile yarn of filaments formed from a copolymer of a vinyl halide with acrylonitrile, which copolymer contains between about 45% and about 80% of the halide and has a specific viscosity at 20°C of between 0.2 and 0.6, the yarn having an acetone-solubility of not more than 75% of that of the copolymer from which the yarn was made, and having a wet tenacity of at least 2 g per denier, a tenacity at 120°C of over 1 g per denier, a wet elongation of at least 10%, and shrinkages of not more than 7% in water at 100°C and of not more than 30% in steam at 120°C.

Waterproof air-permeable fabric. John C. Torrington. Can. P. 456 835, May 24, 1949.

A fabric permeable to air and vapor in the dry state and impermeable to water when wet due to the presence therein of dissimilarly constituted warp and weft threads, the warp threads being coated with polyvinyl chloride and being so constituted as to decrease in length and increase in diameter when the fabric is in contact with water, the decreasing in length and increasing in diameter of swelling of the wetted weft threads acting to bind the static warp threads tightly together thus bringing about a virtual disappearance of the pores of the fabric and thus providing the fabric with a substantially waterproof surface.

Fabric applications C 6

Belting. Wilfrid Lord (to Dunlop Tire & Rubber Goods Co., Ltd.). Can. P. 456 017, Apr. 19, 1949.

Belting for conveyor, power transmission or the like installations comprising rubber or the like in combination with at least one ply of woven textile fabric each ply having one set of weft threads and 2 sets of warp threads, the weft threads being relatively straight transversely of the belt and the warp threads interlacing the weft threads in such a manner that the warp threads of one set surface on one side of the fabric and those on the other set surface on the opposite side of the fabric to provide a double-faced construction of the fabric.

Electrical resistance element. Jas. F. Levers, Richard V. Patchett & Percy Bowles (to Brit. Celanese Ltd. & Rolls-Royce Ltd.). USP 2 499 513, Mar. 7, 1950.

An electrical resistance element adapted to be used as a strain gage, the element being in the form of a woven fabric comprising a textile warp consisting of yarns of continuous high tensile cellulose filaments and comprising, in the weft, a resistance wire lapped with a textile thread, the fabric being stiffened with an electrically nonconducting film-forming material which leaves unfilled interstices or voids extending through the fabric.

Glass fibers help solve industrial problems. Anon. *Safety Eng. 99*, 32-3 (Feb. 1950).

Applications of glass fibers and fabrics discussed include fireproof curtains and draperies, coated and impregnated cloth for many uses, thermal and electrical insulation, and cores for high-strength plastic laminates.

STANDARD FINISHING D

Apparatus for drying webs of material, especially stentering machines. Kenneth S. Laurie (to John Dalglish). USP 2 493 253, Jan. 3, 1950.

A drying machine in which the velocity of the air is kept as low as possible in the passages, and circulation of the air is arranged so as to provide low resistance with a relatively low degree of turbulence and relatively low losses caused by sudden changes in pressure and velocity and passage through restrictions.

Apparatus for steaming textiles. Geo. P. Vincent & Archie L. Dubeau (to Mathieson Chemical Corp.). USP 2 494 731, Jan. 17, 1950.

An improved steamer comprises in combination a closed steam chamber, a plurality of lateral conveyors disposed one above the other in the chamber, means for introducing a ribbon of cloth continuously into the chamber, means for delivering the cloth in accordion folds onto the uppermost conveyor with the folds in a substantially upright position, and means positioned at the discharge end of each conveyor but the last for transferring the folded cloth to the receiving end of the next lower conveyor whereby the cloth moves through the chamber in accordion folds on each of the conveyors. The apparatus also provides means for continuously removing the cloth from the discharge end of the lowermost conveyor and from the chamber.

Apparatus for treating materials. Sumner H. Williams. Can. P. 457 333, June 14, 1949.

The process of treating a continuous web of fabric which consists in drawing the web through a series of passageways closely surrounding the web and causing a thin stream of treating liquid to continuously flow lengthwise in the same direction as the material through the passageways until the

chemical or dyeing action is completed.

Bleaching of natural and synthetic fibers. E. Klenk. *Textil-Praxis 4*, 125-8 (Mar. 1949); *in German.*

The differences between research and the technological aspects of the bleaching of natural and synthetic fibers are discussed on the basis of 15 references.

Carbonizing woolen and worsted cloths. Anon. *Wool Record & Textile World 77*, 667-68 (Mar. 2, 1950); *Wool Rev. 23*, 23 (Mar. 1950).

This is a description of the Spooner carbonizing machine. The impregnating machine consists of a tank, generally of wood, which may be lead-lined and supported within a steel framework. Rollers introduce the cloth into the tank where it goes under other rollers submerged in the liquid, then up through light-weighted squeeze rolls for as many passes as are required. It finally passes through squeeze rollers operated by hydraulic or pneumatic pressure. After squeezing the cloth falls into a scray and then is processed in the dryer. For woolen fabrics in which cotton has been used to strengthen the selvedges, carbonizing may be done on a tenter which is provided with means for applying an alkaline solution to the selvedge to neutralize it.

Choice and application of a detergency test method. W. K. Griesinger & J. A. Nevison. *J. Am. Oil Chemists' Soc. 27*, 96-100 (Mar. 1950).

A detergency test method is described which was developed specifically for the evaluation of heavy duty detergents, i.e., detergents for heavily soiled white cotton goods. The method described is a typical launderometer procedure which has been successfully applied over a number of years to the evaluation of detergents based on the Ultrawets, an homologous series of alkyl aryl sulfonates.

Detergent developments. I-III. Reynold C. Merrill. *Soap & Sanitary Chemicals 26*, 41-3 145, 147 (Feb. 1950); 48-9, 70 (Mar. 1950); 45-7, 147 (Apr. 1950).

Part I is a summary of the development and characteristics of detergents, including soaps. Part II is an account of the development of synthetic detergents, and their advantages, as compared with soap, are discussed. Part III is a discussion of optical bleaches, physical forms of soap, and detergent action.

Discoloring action of aniline on cotton fabrics bleached with chlorine. H. Stuhl. *Melliand Textilber. 31*, 118-19 (Feb. 1950); in *German.*

For the purpose of investigating the familiar pink discoloration caused by the action of aniline on cotton fabrics bleached with chlorine, samples of cotton fabrics—both in the grey state, as well as after desizing and after the kier boil—were treated with chlorine and then dechlorinated with sodium thiosulfate, sodium bisulfite and hydrogen peroxide, and finally exposed to the action of aniline. Parallel treatments of staple fiber samples were also carried out. All the cotton samples not treated with hydrogen peroxide showed a pink coloration, while the whole of the staple rayon samples were unstained. A check test by spotting these samples with a stamp-pad ink, which analysis showed to contain aniline, gave the same result. In spite of intensive treatment of the stained cotton samples with thiosulfate or bisulfite it was still found to be impossible to demonstrate the presence of chloramine, which forms the familiar condensation products with aniline. A staple rayon sample prepared with the sodium salt of paratoluene-sulphonchloramine was similarly stained pink by the action of aniline experiments proved that daylight and illumination by a quartz lamp exert a destructive action on the formation of fuchsine and do not promote it. Hot wet treatment of the goods with 1 g potassium carbonate per liter, followed by thorough rinsing proved to be the best method of getting rid of that pink discoloration and it did not return even under conditions that favored the formation of fuchsine.

Drying machine. Ralph C. Parkes. USP 2 501 537, Mar. 21, 1950.

An improved drying machine in which materials having a high moisture content may be dried, to a limited extent, under relatively high temperatures, and means for expelling the material from the drying chamber when the material is in danger of being ignited, over-dried, etc., whereby damage may be prevented or limited. The cloth is fed upwardly into the drying compartment and is removed from the compartment by being rapidly dropped to a point below the compartment. In this way the top of the compartment remains closed so as to confine the flame, heat or smoke, and the dropped material will immediately find itself in a relatively cool place.

Effectiveness of detergents in removing soil from a cotton and a wool fabric. Margaret S. Furry & Verda I. McLendon. *Am. Dyestuff Reptr. 39*, 209-12 (Apr. 3, 1950).

A printed soil cotton cloth and a printed soil wool cloth were used as test fabrics for evaluating 10

soaps and 27 synthetic detergents in removing soil under standardized conditions. Samples were washed in the Launder-Ometer and efficiency of detergents measured by changes in light reflectance of samples after washing. Data are presented in tables for results obtained with the different detergents under the different test conditions employed. (See also TTD: *6*, 221.)

Evaluation of enzymatic desizing agents. E. Schubert. *Am. Dyestuff Reptr. 39*, 181-89, 202 (Mar. 20, 1950).

This is an English translation of an article that first appeared in *Textil-Rundschau*, Sept. and Oct. 1949. (See TTD: *6*, 43.)

Fulling mill. Frank B. Morrill (to The Jas. Hunter Machine Co.). Can. P. 457 251, June 7, 1949.

In a cloth fulling mill, in combination, opposed rolls squeezing the cloth between them, means driving the rolls to feed the cloth therethrough first in one direction of its length and then in the opposite direction of its length, and a crimp box at each side of the rolls.

Heat setting of textile fabrics. Weldon G. Helmus (to Fair Lawn Finishing Co.). USP 2 499 142, Feb. 28, 1950.

Nylon fabrics and hose are heat set by being passed through a heating zone while being subjected to a current of heating gas the velocity of which is about 400 ft. per min. and the temperature of which is about 300-500°F. The heating gas is directed uniformly over the material each portion of which is exposed to the heating gas current for from 1-10 seconds. The material is cooled immediately upon passing out of the heating zone.

Heat-treatment of webs of textile materials. Weldon G. Helmus (to Fair Lawn Finishing Co.). USP 2 499 141, Feb. 28, 1950.

Provides a device for carrying out the heat setting method of USP 2 499 142 above.

INDEX DES HUILES ET DETERGENTS MODERNES. J. P. Sisley. Paris, Editions Teintex, 1949. 548 p. Price: 63s.

This book deals with surface active agents or, to translate the words of the French author, with "Sulfonated Oils and Modern Detergents," and lists more than 2,500 different products, manufactured by about 150 firms all over the world. It comprises: Introduction; list of abbreviations; application of sulfonated oils and detergents; classification of these products; index of anion-active, cation-active and non-ionic compounds and mixtures, and an alphabetical list of products. . . . The classified index of all the products is the best part of the book. For each group, the various available products are listed according to their chemical composition. Here the author might have been more selective. He enumerates practically all the variants of each product, e.g., 63 oleyl-cetyl sulfonates and more than 180 alkylaryl sulfonites. Instead of listing, for example, more than 8 different Nacconol brands (Nat'l. Aniline and Chemical Co., N. Y.), it would have been better to have stated the names of one or 2 representative products only. In some cases, products have probably been marketed to a single customer's special request. The system of classification used to organize in print the huge collection of proprietary names is good. In the alphabetical index the author gives the name of the manufacturer, the constitution of the product, its chemical classification, physical condition, properties, reaction, patent and literature references (if any) and describes the method of application. This index should be found very useful to anybody engaged in research on and in the manufacture of such products. . . . —*Dyer.*

Materials for bleaching tanks. Wilhelm Hundt. *Textil-Praxis 4*, 123-25 (Mar. 1950); *in German.*

Bleaching processes are discussed briefly and the importance of good design and the selection of the proper materials for bleaching tanks is stressed. Contaminating materials in bleached cloth may not become apparent until the material encounters an atmosphere containings substances which react with the contaminant to produce spots and stains. Increasing use of peroxide bleaches demands more careful attention to the choice of tank materials.

Modern textile auxiliaries. A. J. Hall. *Silk & Rayon 24*, 230, 233 (Feb. 1950); 370, 374, 376, 378 (Mar. 1950).

The uses of textile auxiliaries are noted briefly and the chemical theories underlying the use of auxiliaries are reviewed. A list of 44 auxiliaries (principally of British manufacture) is given with brief notes as to the chemical properties of each; manufacturers names are also listed.

Quality and speed in textile processing. Myron T. Fleming. *Can. Textile J. 76*, 62, 65 (Mar. 17, 1950).

It is contended that textile processing should constantly improve quality and increase in speed. In support of this, examples of recent textile ad-

vances in drying, shrinkage control, heat treating, dyeing and finishing are discussed. In each case, both speed of processing and quality have been radically improved. The requirements for such progress are close cooperation between mill and machinery supplier, and the willingness of the machinery supplier to supply engineering service and accept process responsibility.

Sodium chlorite bleaching. Gilbert De Smet. *Textielwezen 6*, 39-46 (Feb. 1950); *in Flemish.*

Sodium chlorite, a newcomer in the bleaching industry, is remarkable for its outstanding properties: high content in active chlorine, high solubility in water, stability, very low alteration of oxidizing power with the variations of the pH in its solutions. It remains harmless to the cellulose compounds in acid medium, even hot, so that the textile materials, when bleached with chlorite, keep a higher mechanical strength than hypochlorite bleached textiles. Used alone or in combination with chlorine water or hypochlorites, it gives particularly remarkable results in the bleaching of cellulose or other textiles: linen, nylon, jute, flax, mixed fabrics, etc. It is also successfully used to bleach oils, vegetable or animal fats, beeswax, etc. Directions are also given for various practical uses of the sodium chlorite.

Sorption of soap by textile fibers. A. S. Weatherburn, G. R. F. Rose & C. H. Bayley. *Can. J. Research 28*, 51-61 (Mar. 1950).

The sorption of the sodium soaps of lauric, myristic, palmitic, stearic, and oleic acids from aqueous solutions by various textile fibers was measured. The sorption of both the fatty acid and alkali components of the soaps by dull acetate rayon and dull nylon fibers was essentially the same as that shown by the corresponding bright (undelustered) fibers, while dull viscose rayon sorbed considerably more fatty acid that the bright fiber. In general, the order of increasing sorption was: cotton, nylon, acetate, bright viscose, dull viscose, and wool. Of the saturated soaps, the maximum sorption of fatty acid by all fibers was obtained with sodium myristate; the alkali sorptions were approximately the same for myristate, palmitate, and stearate, all of which were higher than for laureate. The sorption from sodium oleate solutions corresponded approximately to that from the C_{14}-C_{16} saturated soaps. Preferential sorption of alkali by cotton and viscose rayon was observed for all soaps: acetate rayon, nylon, and wool showed preferential sorption of fatty acid with the lower molecular weight soaps and preferential sorption of alkali with the higher soaps. Suppression of hydrolysis by the addition of excess free alkali resulted in a reduction in fatty sorption in every case, and shifted the maximum from the C_{14} to the C_{16} soap. It was concluded that the sorption of soap by textile fibers is a complex process involving the more or less independent sorption of neutral soap, hydrolytic fatty acid (or acid soap), and hydrolytic alkali.

Treatment of cellulosic fibrous materials. Hendrik C. Jansen & Newton W. Barritt (to Shell Development C.). USP 2 501 337, Mar. 21, 1950.

Improving the wetting action of anion-active wetting agents upon cellulosic fibers by pretreating the fibers with a higher alcohol.

Treatment of fabric and apparatus therefor. Raymon P. Allen (to Seiberling Rubber Co.). Can. P. 457 412, June 14, 1949.

Means for treating tire fabric while spread flat which comprises fabric-dipping means with facilities for conveying fabric therethrough while spread flat, drying means which comprises rotatable means of large diameter adapted for the passage of fabric thereover while the fabric is spread flat, and between these freely rotatable means of uniform diameter movable lineally with respect to the dipping and drying means over which the fabric passes while spread flat, and mechanism which includes a stalled torque motor connected with a reversible switch and a rheostat for maintaining the freely rotatable means in a substantially constant position lineally with respect to the dipping and drying means whereby the tension on the fabric is controlled and maintained substantially constant.

Weft straightener. Robt. W. Vose & Chas. H. Plummer (to Johnson & Johnson). Can. P. 456 398, May 3, 1949.

In a weft straightener the combination of means for moving in the direction of its warp a strip of fabric having warp and weft threads, means for illuminating the fabric so that equal light is reflected by the weft threads toward opposite edges of the fabric when the weft is perpendicular to the warp, and means for controlling the position of the weft threads with respect to the warp threads in response to the differential reflection of light from the illuminating means toward opposite edges of the fabric by the weft threads.

DYEING AND PRINTING E

Dyeing

Coloring Orlon acrylic fiber. Anon. *Rayon & Syn. Tex. 31,* 63-4 (Apr. 1950).

This is a brief account of progress in research on the dyeing or Orlon acrylic fiber.

Continuous dyeing and developing machine. Bernard V. Stec (to Botany Worsted Mills). USP 2 501 480, Mar. 21, 1950.

A continuous dyeing and developing machine for fabrics.

Direct dyes on cellulose fibers. Irving Teplitz. *Knitter 14,* 40, 43-4 (Apr. 1950).

The dyeing of direct dyes on cellulose fibers is discussed.

Dyeing. E. Elöd & H. G. Fröhlich. *Melliand Textilber. 31,* 179-82 (Mar. 1950); *in German.*

The theory of dyeing protein fibers with acid and substantive dyestuffs must be completed. Comparative researches on dyeing wool, natural silk, ardil, and polyamide fibers indicate differences in the mechanism of the possible combinations. Besides the formation of protein salts in the region above the isoelectric point sorptive forces and probably hydrogen bridges between the protein substances and the dyestuffs can play a role, especially in the isoelectric region. Below pH = 2 the reaction capacity of protons in the carbonamide groups of the polyamides do cause an augmentation of the taking-up of dyestuffs. In dyeing with substantive dyestuffs it is necessary to take in consideration the chemical and also the histological constitution of fibers. Always it is important to notice, that not only the different kinds of fibers but also the dyestuffs have their own individuality.

Dyeing and finishing mixtures containing acetate rayon staple fiber. A. Mellor & H. C. Olpin. *J. Soc. Dyers Colourists 66,* 44-50 (Jan. 1950).

The dyeing and finishing of mixtures of Celafibre (British Celanese Ltd. cellulose acetate staple fiber) and viscose staple and Celafibre-wool mixtures are discussed. Methods of removing size and carrying out other pretreatments are cited. The requirements for obtaining the proper shades as well as the dye formulations for the above mixtures are given. Certain precautions necessary for the elimination of reed marks, weaving strains, and lack of full hand are given.

Dyeing hosiery and knit goods. Von Lint. *Melliand Textilber. 31,* 115-17 (Feb. 1950); *in German.*

The aim of the present article is to provide hosiery dyers with hints on how the various knitted fabrics and hose must be treated in the dyehouse. A brief reference to the various textile materials used for the production of hosiery fabrics and hose at the present day is given. Further, the most important points that must be considered in practical finishing in hosiery dyeing are described and the most important texile auxiliaries and dyes that are used are discussed. Hosiery dyeing machines which work very successfully are mentioned. In view of the increasing importance that the polyamide fibers Perlon and nylon have lately attained in the hosiery trade, brief hints are given on how to treat them in the dyehouse.

Dyeing of spun nylon yarns and nylon staple. *Tech. Bull. (DuPont) 6,* 16-23 (Mar. 1950).

(Adapted from an article by S. G. Turnbull, Jr., published in the Sept. 18, 1948 issue of *Knitted Outerwear Times*). The choice of dyes to be used in the dyeing of articles produced from nylon staple yarn is governed by the fastness properties required for the particular end use. Selected acid and direct colors are available that are fast to washing, crocking, perspiration, dry cleaning, sea water, chlorinated pool water and other agents. In these respects, dyes on spun nylon are equal to or superior to the same colors on wool. However, the light fastness of these colors on nylon is, in general, inferior to that on wool and other fibers, but is nevertheless satisfactory for many uses. Fiber blends in which nylon is present in a substantial amount can generally be dyed satisfactorily, although considerable work may be required to develop suitable dyeing formulations.

Dyeing of spun rayon. A. W. Bakker & J. Borggreve. *Enka Breda Rev. 4,* 10-15 (Feb. 1950); *in Dutch.*

A description is given of the important winding process. For a thorough dyeing of spun rayon on cylindrical or conical cross-wound bobbins it is first necessary to make a soft yarn package which remains in this condition during the dyeing process. A description follows of the existing dyeing apparatus and the various dyeing methods.

Dyeing shoddy. Karl Wojatschek. *Melliand Textilber. 31,* 192-94 (Mar. 1950); *in German.*

The author discusses a number of single-bath processes for dyeing shoddy with an admixture of vegetable fiber, as well as a few methods of aftertreatment, and also points to the importance of giving the material a good preliminary cleaning,

because it has often been lubricated with mineral oils.

DYEING WITH COAL-TAR DYESTUFFS. C. M. Whittaker & C. C. Wilcox. 5th ed. London, Baillière, Tindall and Cox, 1950. 375 p.

There is little need to praise a book which, after 30 years of existence, has reached its fifth edition. It is one of those rare cases where the authors really try hard to bring the contents up to date and improve each edition in every respect over its predecessor. This means, of course, that the authors have taken due notice of the great wealth of material which has accumulated during the last 10 years concerning the application of dyes to textile materials. It is illuminating to compare the fifth edition with the third one, issued in 1939. Not only does the present edition contain 57 pages more than the third, but each page contains 660 words instead of the former 380, thus giving twice as many words for the whole book. . . . —*Dyer*.

Effect of resin treatments on the fastness properties of dyed acetate rayon and spun nylon. Anon. *Tech. Bull. (DuPont) 6*, 33-8 (Mar. 1950).

All the DuPont direct and developed acetate colors were applied to acetate rayon satin and to spun nylon. Portions of each dyeing were treated to retain approximately 5% urea-formaldehyde and 5% melamine-formaldehyde. Both control and resin-finished dyeings on acetate rayon were subjected to light (Fade-Ometer), washing, sublimation, crocking and gas fume fading tests. The spun nylon samples were evaluated for differences in light fastness. In general, neither resin adversely affected the fastness to light, crocking and sublimation of dyed acetate rayon. Both resins, particularly melamine-formaldehyde, improved the resistance to gas fume fading of the sensitive direct acetate dyes. The fastness of the developed dyes was comparatively unchanged in this respect. Fade-Ometer tests on control and on resin-treated samples of dyed spun nylon usually showed only slight differences. Both fabrics exhibited shade changes which varied with the individual dyes. In some cases the changes might be desirable; in others, the variation undoubtedly could be counteracted by a suitable adjustment in the dye formula. Data are presented in tables.

Effect on the "Schollerize" wool stabilization process on the shade and strength of acid, Chromacyl and chrome dyes. Anon. *Tech. Bull. (DuPont) 6*, 24-9 (Mar. 1950).

Tables are given indicating the effect of "Schollerizing" on the strength and shade of DuPont acid, Chromacyl and chrome dyes. These colors were dyed on tropical worsted by standard DuPont laboratory methods. A wool stabilization treatment was applied to the dyed material by Scholler Bros., and the fastness properties were then evaluated at the DuPont Technical Laboratory. Data on other stabilization methods will be published in the future.

Faster dyes for knitted wool goods. Can the dyer meet this demand? Alfred W. Carpenter. *Textile Recorder 67*, 69-71 (Feb. 1950).

This is a discussion, in non-technical language of the recent consumer demand for faster colors for knitted wool goods as it affects manufacturer and dyer.

Fastness to Florida sunlight under glass of acid, Chromacyl, chrome and direct dyes on nylon. Anon. *Tech. Bull. (DuPont) 6*, 39-47 (Mar. 1950).

Results of Fade-Ometer and sunlight tests show that approximately half of the direct and acid dyes, and nearly all of the Chromacyl and chrome dyes evaluated, merit a higher rating when exposed to sunlight than when exposed in the Fade-Ometer. Generally this difference is only about one rating point for the direct and acid dyes and one or 2 points for the Chromacyl and chrome colors. In general, the direction of fade in both sunlight and Fade-Ometer is similar. Fastness ratings for the dyes evaluated are given in a table.

Felt dyeing and processing. B. Kramrisch. *J. Soc. Dyers Colourists 66*, 50-2 (Jan. 1950).

Prior to the discussion of either dyeing or processing of felts, the theories of felting and the factors which govern felting are briefly discussed. The methods of manufacture and uses of continuous (flat) felts and hat felts are also described, as are the dyes, type of equipment, and methods of dyeing wool felts.

Fixation of vat colors. A Technical Correspondent. *Textile Weekly 45*, 613-16, 618, 620 (Mar. 10, 1950).

The main types of problems encountered in every day ageing processing for the fixation of vat colors are: shade variation; cloth damages on entry and exit of cloth; lifting or smearing of print color on cloth, especially in agers of the roller type. Several instances of each type of fault are discussed.

How glycerine works for the textile industry.

Milton A. Lesser. *Textile Bull. 76*, 73-4 (Mar. 1950).

The properties of glycerine which make it of value in textile processes, particularly printing, are noted. Several print paste formulas and thickening formulas are presented and discussed.

Influence of the cuticle in the dyeing of the wool fiber. H. E. Millson & L. H. Turl. *Can. Textile J. 67*, 51-4 (Mar. 17, 1950).

In this investigation, an attempt was made to study the dependence of dye penetration upon physical factors such as fiber distortions, natural degradations, incision or mechanical damage to the cuticle. The penetration of dyes into cut ends and crushed areas of fibers, which has been observed previously, was extended to include many dyes applied by a variety of methods. The progress of penetration through such physical defects was also observed in detail. The belief that physical distortion, such as in knotted fibers, would produce changed rates of penetration of dyes was substantiated.

Method of dyeing keratinous fibers. Edwin B. Michaels & Bernard Berk (to Lawrence R. Bruce, Inc.). USP 2 501 184, Mar. 21, 1950.

A method for imparting color to keratinous fiber at body tolerance temperatures, with dyes normally non-substantive thereto, which comprises treating the fiber with reagents incorporating a dye of the class aforesaid, the reagents consisting of dilute acetic acid having the characteristics of opening the fiber, and urea having the property of greatly swelling the keratin fiber and disrupting the secondary linkages thereof only in the presence of and upon opening of the fiber by the acid, to increase the permeability of the fiber to the extent that the dye aforesaid penetrates and diffuses through the cuticle of the fiber.

Permanent dyes and finishes applicable to glass fabrics. Margaret Ralston. *Textile World 100*, 120-21 (Mar. 1950).

Waterway Projects, Inc. has developed an effective process capable of finishing 5,000 yards of gray fabric daily. The continuous chemical process is secret. Colors used at present are white, green, coral, yellow, blue, and gold. The company can also print 500 yards daily. The dyes used are flameproof and non-fading. The company is equipped to overcoat fabrics with lead, copper, nickel, or stainless steel. Another mill will soon acquire these patents and intends to move East and expand operations.

Process of dyeing nylon with dilute solutions of acid dyes. Wm. H. Sharkey (to E. I. duPont de Nemours & Co.). USP 2 499 787, Mar. 7, 1950.

A process for obtaining by dyeing with acid dyestuff evenly dyed nylon textile articles, the process comprising immersing the nylon article in an aqueous dyebath containing the acid dyestuff in the liquid phase in a concentration at which the dyestuff is present in amount from 0.1 to 50 parts per million based on the weight of the aqueous medium, and at which the dyebath is without appreciable visual color, adding to the dyebath during the dyeing a dilute solution of the acid dyestuff at a rate which is less than the rate of absorption of the dyestuff by the nylon, and which maintains the dyebath throughout the dyeing without appreciable visual color, and conditioning the addition of the dye solution at said rate until the desired depth of shade in the nylon article is obtained.

Rapid determination of sodium sulfide, sodium hydroxide and sodium hydrosulfite in booster baths. Anon. *Tech. Bull. (DuPont) 6*, 30-2 (Mar. 1950).

A simple, accurate and rapid method of analysis for booster baths containing sodium hydrosulfite, sodium hydroxide and sodium sulfide is described briefly. The principles involved are: 1) for sodium hydrosulfite—titration of the sodium hydrosulfite with standard indigo disulfonate solution; for sodium sulfide—the sulfide is titrated by a standard zinc solution; 3) for sodium hydroxide—the sodium hydroxide is titrated with standard HCl using an outside indicator on a spot plate. A correction is made for the Na_2S content.

Recent trends in the search for new azo dyes. I—Dyes for wool. A. H. Knight. *J. Soc. Dyers Colourists 66*, 34-44 (Jan. 1950).

The main objectives in azo dye and pigment research are cited. These include: 1) meeting requirements of new fibers, 2) filling gaps in hue ranges, 3) increase in light fastness, and 4) fastness to wet treatment. The chemistry of azo wool dyes is discussed under the general headings of acid wool dyes and mordant wool dyes. These 2 main categories are further broken down into level dyeing and fast to milling dyes (acid wool dyes) and for the mordant dyes on the basis of the substituent groups present.

Standfast metal machine. Anon. *Dyer 103*, 406-07 (Apr. 7, 1950).

This is a report of a lecture by G. L. Boardman

describing the "Standfast Metal Machine" for continuous vat dyeing. The cloth is impregnated with dye liquor and passed through a U-shaped tube containing molten metal where dyeing is completed. The dye liquor floats on top of the molten metal. During dyeing the cloth in continuous length is passed through the dye liquor, where it becomes thoroughly saturated with the liquor, and directly into the molten metal where all excess liquor is squeezed out by pressure of the metal. During its passage through the molten metal, which is maintained at a temperature of 95-105°C, dyeing takes place, and on leaving the machine the exhausted dye liquor is removed in another vessel very similar to the dye vessel, but this time containing Glauber's salt solution as wash liquor. The maximum speed achieved is 120 yds. per minute, and uniform shades are said to be achieved on a wide variety of fabrics.

Steam in the dyehouse. Irving Teplitz. *Rayon & Syn. Tex. 31,* 89-90 (Mar. 1950); 84-5 (Apr. 1950).

Methods of obtaining more efficient utilization of steam in the dye house are described briefly.

Textile dyeing machines for piece goods. Irving Teplitz. *Textile Bull. 76,* 74, 76, 78, 80 (Mar. 1950).

The principles of jig dyeing are discussed and the various types of jigs are noted. The pad-steam and Williams methods are also discussed.

Textile instruments. XIV—Instrument control of dyebaths. R. W. Moncrieff. *Fibres 11,* 37-40 (Feb. 1950).

The advantages of using instruments for process control are cited. These advantages are as follows: 1) human factor is decreased or eliminated, 2) permanent record available for future reference, 3) each batch is dyed under the proper conditions, 4) dyeing conditions are precisely maintained, 5) a single operator can tend more than one machine and 6) production is increased. In addition, some instruments and their requirements are described. Features of an automatic control system for dyeing are also noted. (See also TTD: *7,* 158.)

Use of enclosed winches in the dyeing of rayon fabrics. D. K. Ashpole, R. A. McFarlane & C. C. Wilcock. *J. Soc. Dyers Colourists 66,* 17-27 (Ja. 1950).

A design of enclosure for a winch (dolly washer) is described whereby the fuel saved can be calculated. The effect on dyehouse practice of using such machines is also described. Owing to the higher temperature of dyeing, a greater quantity of any bicarbonates present in water is converted to carbonates causing an increase in pH of the dye liquor. Therefore when dyeing with direct cotton dyes the difference in shade as compared to open winch dyeing must be compensated for. Other advantages of the enclosure such as increased rate of dyeing, and better dye penetration are also cited.

Printing

Damage to copper rollers for textile printing. Technicus. *Textile Recorder 67,* 80-3 (Feb. 1950).

This is a discussion of practical methods of preventing damage to copper rollers and methods of repairing damage.

Gum tragacanth as a printing paste thickener. Wolfgang Jülicher. *Melliand Textilber. 31,* 51-4 (Jan. 1950); *in German.*

Two factors tend to hinder the suitability of gum tragacanth for use as a printing thickening. In the first place, a multiplicity of various qualities is sold, and secondly, the unfavorable course of the dilution curves and its instability in the presence of alkalies introduces an element of uncertainty that a printer cannot put up with. The gel formed by the dessicated exudation of the plant is partly reconverted into the sol when boiled and the process cannot be stopped by breaking off the boiling, for it continues at a slow rate also in the cold solution. Gum tragacanth thickenings for that reason tend to thin, when allowed to stand. The gel-sol ratio of the thickening decides the result of the printing process. i.e., the gel acts as dyestuff carrier and the sol as distributor, so that the chemical industry was faced by the task of creating thickening agents that are not affected by alkali and possess the correct ratio of sol to gel. That problem has been solved in several ways, whereby, however, natural products must always form the raw material in the first place, because these are the only substances that contain sol and gel in the proper proportion.

Photographic stencil screen and method of making the same. Thos. D. Sharples (to The Sharples Corp.). USP 2 500 877, Mar. 14, 1950.

The process of producing a half-tone stencil screen which comprises preparing an open mesh woven textile fabric with the strands of which is incorporated a light-sensitive silver salt, impregnating

the fabric with gelatinous material, exposing the fabric thus prepared to the action of light passing through a photographic transparency, developing the exposed fabric to convert the silver salt in different parts thereof into metallic silver in accordance with the degree of exposure to light, treating the developed fabric with a liquid chemical preparation capable of rendering the gelatinous material in different areas thereof less soluble in proportion to the amount of metallic silver present, and subjecting the treated fabric to the action of a solvent capable of removing the gelatinous material from the meshes of the fabric in the various areas where the gelatinous material remains soluble.

Print roll data useful to printers. D. C. McGiehan. *Textile World 100,* 137, 139, 238, 240 (Feb. 1950).

Print rolls are made of the purest copper available; copper lends itself readily to the various methods of engraving. Important roll dimensions are length, circumference and bore, the bore designating the roll's internal characteristics. Hydraulic forcing jacks are recommended for forcing mandrels into print-rolls. Solid wall, all copper print rolls stand up better in use and small dents and nicks in them may be repaired. Dimensions of standard bores are given in a table and suggestions for ordering print rolls are noted.

Printing with chrome dyes. Herbert Barth. *Melliand Textilber. 31,* 120-25 (Feb. 1950) ; *in German.*

The article opens with a brief historical survey of the application of chromium compounds in calico printing and goes on to explain with the aid of a number of examples the structure of the color lakes as "internal complex salts" in connection with the chemical constitution of dyes. The author then deals with the method of action of mordants, which, in the present case, are easily hydrolyzed salts of trivalent chromium. Hydroxides of chromium and the appertaining color lakes are produced upon the hydrolytic dissociation of the chromium mordants by way of basic salts (gradual hydrolysis). Among the chromium mordants, the chromium salts of organic acids are of the highest importance for calico printing and their chemistry is briefly handled. Alkali chromates are also used in printing mordant dyes; they are reduced to chromic salts during steaming. The chromate process presents advantages, more especially for the printing of chrome dyes alongside of Rapidogen, Rapid Fast and vat dyes. The printing of chrome dyes presents 2 outstanding problems: Firstly, fixation of the dyes by a short steaming, and secondly, the possibility of washing out the thickenings, as well as the application of thickenings that coagulate with chromium salts. The production technique of printing with chrome dyes can be adapted to modern requirements by simultaneous use of fixation accelerators and agents that improve the facility with which the thickenings can be washed out.

Screen printing. A. Roth. *Melliand Textilber. 31,* 55-7 (Jan. 1950) ; *in German.*

The article opens with a brief description of screen printing with special reference to the efforts made to mechanize it. Then follow a few fundamental remarks on the problem as to what extent and in what form partial mechanization is still advisable at the present day on the basis of the printing table of traditional construction in consideration of the state of mechanical screen printing. In view of the latter factor as the result of practical experience a device has been developed which promises a modern solution of efforts in that direction in consequence of its more favorable provisions in respect to the expense involved.

Selecting screen printing lacquers. Kurt Scholl. *Melliand Textilber. 31,* 125-26 (Feb. 1950) ; *in German.*

Owing to the large number of screen printing lacquers offered as reinforcing lacquers for photochemically produced screens either by the preliminary lacquering process or by the reinforcing process, it is difficult for a colorist to select a lacquer that will resist both mechanical as well as chemical influences. The author describes a mechanically driven apparatus which permits judging the suitability of a film screen lacquer within a few hours and thus saves working time.

Sidelights on textile print thickeners. A Technical Correspondent. *Can. Textile J. 67,* 55-6, 60 (Mar. 17, 1950).

This is a description of the various ways thickenings may be used in addition to that of acting as the thickening medium proper in the application of dyestuffs in textile printing, and how many types of thickeners may act as auxiliaries to the main thickening mediums.

Silver fish attack on printed fabrics. Rudolf Oys. *Melliand Textilber. 30,* 294 (July 1949) ; *in German.*

The printed designs of rayon window-curtains are frequently found to show traces of destruction. The samples sent in for examination consisted of a mixture of cotton and viscose rayon and the

damaged places show the characteristic traces of having been attacked by the silver fish (*Lepisma saccharina L.*), i.e., the viscose threads had been destroyed or removed to some extent, while the cotton warps were entirely intact. With the help of animal experiments the point was cleared up as to whether dyestuffs, more especially vat dyes, invite insect attack or are able to alter viscose to such an extent as to make it palatable for the silver fish. The additions made to the dyestuffs during the printing process were also the subject of investigation. The textile pest *Lepisma saccharina L.*, shows that it is only the starch used in the preparation of the thickenings that specially attract its attack on the printed parts of the fabric.

Sodium alginate as a printing paste thickener. Ernst K. H. Schmidt. *Melliand Textilber. 31*, 194-96 (Mar. 1950); *in German.*

Sodium alginate—the sodium salt of alginic acid—is excellently adapted for use as thickening in the pastes used for textile printing, more especially the highly refined products of the seaweed *Laminaris digitata* found along the rocky coast of Norway, the qualities of medium viscosity being best adapted for the purpose. Sodium alginate is a pure chemical product free from impurities. It resists the action of alkalies and is sensitive to acids, but the pH value must not lie below 3.0 It is completely soluble in cold or hot water by stirring thoroughly. It must not be boiled and even hot water will lower its viscosity and therewith also its yield, which is otherwise very great. Calgon must be previously added when hard water is being used. The alginate solution can be preserved by means of 2.0% salicylic acid or by the addition of formaldehyde, amicrol or esters of benzoic acid. The use of sodium alginate as thickening in printing pastes gives an excellent yield of dyestuff, sharp details and the desired suppleness, because it can easily be rinsed out owing to its high solubility in water. Since it possesses no reducing properties, it is well adapted for machine and screen printing with Rapidogen and Indigosol dyes (but not for chrome dyes), as well as vat dyes. It is recommended to replace potassium carbonate by soda.

Three methods of engraving. Walter Best. *Melliand Textilber. 31*, 119-20 (Feb. 1950); *in German.*

The present article contains critical remarks by the author on the 3 chief methods of engraving, which differ considerably from one another, i.e., pantograph, photochemical and intaglio, commonly used for the practical preparation of printing rollers.

Ungelatinized starch ethers from polyfunctional etherifying agents. Moses Konigsberg (to Nat'l. Starch Products, Inc.). USP 2 500 950, Mar. 21, 1950.

A modified starch in the physical form of ungelatinized starch granules having the property of inhibited gelatinization when dispersed in water under normal gelatinization conditions, comprising the product of chemical reaction of ungelatinized starch, under conditions which do not effect gelatinization of the starch, and an ether forming reagent containing at least 2 functional groups which form ether linkages with at least 2 hydroxyl groups of the starch molecules. The products of this invention, because of their distinctive, smooth, relatively non-cohesive character, are of value in printing gums for the textile industry, particularly because their smooth, non-cohesive character is not adversely affected by the alkalis present in certain textile printing operations.

SPECIAL FINISHING F

Adhesion of rubber to fibrous materials. Fred S. Perkerson (to Callaway Mills Co.). USP 2 499 774, Mar. 7, 1950.

The method of improving the adhesion of rubber to fibrous textile materials which comprises applying to the material a thiosalicylic acid compound containing a carboxyl group in ortho position to an SH group, applying a vulcanizable rubber compound to the treated fibrous material and vulcanizing the rubber compound.

Chemical aspects of the finishing of fibers and fabrics. H. C. Borghetty. *Rayon & Syn. Tex. 30*, 79-80 (Nov. 1949); *31*, 85-7 (Jan. 1950); 81-2 (Feb. 1950); 85-6 (Mar. 1950); 81-2 (Apr. 1950).

The use of chemicals to modify the chemical and physical properties of textile fibers is discussed and subjects covered include: application of special finishes to cotton and the chemical reactions involved in such treatments as mercerizing and waterproofing; use of synthetic resins, synthetic fibers, chemical modifications of cellulosic fibers, and animalization of cellulose fibers; synthetic fibers other than cellulosic—nylon and Vinyon—and the animal fibers, silk and wool; mothproofing, shrinkage control of wool fibers, and resinification of the wool fiber.

Coated fabrics and process of making same. David

[illegible]

J. Sullivan (to E. I. duPont de Nemours & Co.). USP 2 502 353, Mar. 28, 1950.

The process of preparing coated fabrics which are highly resistant to abrasion and flexing, which comprises coating a strong woven textile with about 2½ oz. per linear yard of 54″ material of a composition containing the following:

	Parts by weight
polychloroprene	100
coumarone resin	5
vulcanizing agents, retarders, fillers as necessary	

applying thereto by calendering about 9 oz. per linear yard of a composition containing 100 parts of a polychloroprene together with vulcanizing agents, and thereafter applying a plurality of top coats containing about 1 oz. per linear yard of a composition containing about 100 parts of a copolymer of chloroprene and acrylonitrile, 18.5 parts of glycerine, 18.5 parts of maleic anhydride and 91.5 parts of wood rosin, and thereafter heating the coated fabric to about 260°F for 2 hrs. to react the glycerine, maleic anhydride, and wood rosin.

Cotton fabrics need not burn. Morris D. Van Patten. *Safety Eng. 99*, 14-15, 51-2 (Jan. 1950).

Flame resistant finishes for cotton fabrics are available in various types: water soluble treatments which are inexpensive but temporary, permanent treatments, and types intermediate between these in weather-resistance and cost. Specifications set up include Federal Specification CCC-D-746, Army Specification 6-345, and Navy Specification 24-C-20, while the ASTM, the AATCC, and the Bureau of Standards have worked on testing methods. Application of fire resistant finishes may be made in the field by brush, dip, or spray methods, or in the factory. Costs of the treatments vary, but are generally small compared to other costs of manufacture. A recent development is the coating of fire-resistant fabrics with vinyl plastic for special uses.

Crease-resistance in textiles. B. B. Korzen. *Tids. Textilteknik 8*, 27-36 (Feb. 1950); *in Danish.*

In the article the author first gives a general view of crease-resistance and textiles on the basis of George S. Buck, Jr. and Frank A. McCord's treatise in *Textile Research J.*, April, 1949, with market prospects and technical aspects; the survey of test methods is especially detailed. After that the author gives the result of his own measurements of crease-resistance for about 200 different qualities of dress material according to the method indicated by the Shirley Institute and using the Wrinkle Recovery Tester of the Monsanto Chemical Co. The author proposes to adopt a crease-resistance scale from 1 to 5 after the analogy of color fastness. He gives an example: goods in class 1 have wrinkle recovery angles below 104°, goods in class 2 have wrinkle recovery angles between 105° and 119°, goods in class 3 have wrinkle recovery angles between 120° and 134°, goods in class 4 have wrinkle recovery angles between 135° and 149° and goods in class 5 have wrinkle recovery angles at 150° and upwards. The goods in class 1 will crease perceptibly, whereas class 3 will be satisfactory under general conditions of use, and goods in class 5 are to be sold with guarantee for crease-resistance.

Creasing and creaseproofing of textiles. D. D. Gagliardi & I. J. Gruntfest. *Textile Research J. 20*, 180-8 (Mar. 1950).

A discussion of creasing and creaseproofing fabrics made of regenerated and native cellulose fibers. An attempt is made to determine why the fabrics crease, the stress-strain properties of the fibers related to the creasing phenomenon, and properties needing modification to produce crease resistance and what reactions and compounds are required to achieve this modification.

Fabrics and process of producing them. Wm. H. van Glahn & Wm. L. Walsh (to Gen. Aniline & Film Corp.). Can. P. 456 027, Apr. 19, 1949.

A process which comprises subjecting material comprising yarn selected from the group consisting of vegetable fibers, artificial fibers and silk to the action of a sulfuric acid salt of an organic base to impregnate at least a part of the yarn therewith, applying an alkaline paste to the yarn to coat a part of the yarn therewith, heating the material until the uncoated portion of the yarn impregnated with the salt is rendered friable and removing from the material such friable yarn.

Fireproofing of textile materials. F. Defalque. *L'Industrie Textile 67*, 81-4 (1950); *in French.*

A review of the many methods of flameproofing textiles. Several patents are mentioned which cover the use of chlorinated hydrocarbon compounds and resins for this purpose. Several tests for fireproofing are listed.

Investigations of anti-crease treatments for cotton. R. F. Nickerson. *Textile Mfr. 76*, 134-37 (Mar. 1950).

See TTD: *7*, 145.

Method for the treatment of fabric, yarns, threads, strands, and the like to render rubberized

articles made therefrom more durable. Malcolm R. Buffington (to Lea Fabrics, Inc.). USP 2 501 988, Mar. 28, 1950.

A method for the manufacture of a rubberized article which comprises treating a fabric with a solution of methyl cellulose so as to penetrate the threads thereof without clogging the meshes of the fabric when dried, drying the fabric, impregnating the fabric with a rubber cement composition and vulcanizing the rubber.

Method of treating wool. Daniel Frishman & Milton Harris (to Milton Harris Associates). Can. P. 457 385, June 14, 1949.

A method of treating woolen materials to impart resistance to shrinkage which comprises contacting the material with a hypochlorite solution containing from about 1% to about 6% available chlorine based on the solution for a period of from about 2 to about 10 seconds at a pH of about 7.5 to about 9 at a temperature not exceeding about 35°C in the presence of a wetting agent and immediately thereafter treating the material with an antichlor.

Mildewproofing textiles. M. Nopitsch. *Melliand Textilber. 31,* 182-88 (Mar. 1950); *in German.*

Microorganisms are also to be found among the agents the action of which leads to the premature wearing out of textiles. The author explains the conditions of origin of the molds that cause the damage, giving their names and discussing the methods hitherto applied to protect fabrics against them. He then proceeds to describe the methods of recognizing damage from that source and for the examination of the efficiency of fungicide finishes. The article concludes with the results of tests applied to a considerable number of textiles that have been given a fungicidal finish, pointing out the success of treatment with heavy metal salts of aromatic antiseptics.

New finishes. X-XII. Technologist. *Textile Mercury & Argus 122,* 231, 233, 235 (Feb. 10, 1950); 275, 277-78, 280 (Feb. 17, 1950); 437, 439-40 (Mar. 17, 1950).

The last 3 articles in this series cover the following topics: 10—Use of formaldehyde and derivaties for stabilized finishes; 11—an improved "Sanforset" process; 12—dimensional stability in cellulose rayon materials. For Parts 1-9 see TTD: 7, 229.

Permanent finish for textiles. John M. Hood (to Am. Cyanamid Co.). Can. P. 456 842, May 24, 1949.

A composition for finishing textiles which comprises essentially a mixture of an alcohol-reacted melamine-aldehyde condensation product and a salt of an alkoxypropylamine containing at least 11 C atoms.

Pre-gummed paper, fabric and other material. Salomon Neumann (½ to Shand Kydd Ltd.). Can. P. 456 245, Apr. 26, 1949.

A process for the manufacture of pre-gummed paper, cardboard, fabrics and light sheet materials of the type described, which consists in first coating a surface of the sheet material with an aqueous suspension of starchy material selected from the class consisting of starch, chlorinated starch, dextrines and starch gums, which are not normally soluble in cold water but which can be rendered cold water-soluble by the application of heat, the starchy material constituting the major proportion of all solids in the suspension and subsequently heating the coated material to a temperature such that the starchy material swells and attains a cold water-soluble condition.

Process for imparting shrink resistance to wool. Harry F. Clapham & Arthur L. Smith (to Harris Research Laboratories). USP 2 499 987, Mar. 7, 1950.

A process for imparting shrink resistance to woolen and wool containing material, comprising: the step of applying, for a few seconds only, at a predetermined temperature not higher than room temperature and under conditions wherein substantially no reaction occurs, to the material a hypohalite solution containing from about 1% to about 6¾% available halogen; and the immediately subsequent step of abruptly increasing the first named predetermined temperature to a predetermined point not less than 125°F at which a reaction between the wool and the substance takes place.

Resinous fungicidal compositions. Herman A. Bruson (to Rohm & Haas Co.). USP 2 497 927, Feb. 21, 1950.

A resinous fungicidal agent for use in mildewproofing pervious fibrous materials comprises the product of copolymerizing substantially equimolar amounts of an anhydride from the class consisting of maleic and chloromaleic anhydrides and an ether having the general formula $Ar—(O—CH_2CR{=}CH_2)_n$ in which R represents a member of the class consisting of a methyl group and a hydrogen atom, n is a whole number having a value of one to 2, and Ar is a chlorinated aromatic hydrocarbon radical of the benzene and naphthalene series

containing one to 5 halogen atoms.

Silicone water repellent easily applied to nylon. F. L. Dennett. *Textile World 100,* 155, 157 (Feb. 1950).

A silicone water repellent treatment is suitable for nylon, nylon blends, and acetate and viscose blends. Fabrics from a loosely woven marquisette to tightly woven material have been successfully treated with a viscous, high polymeric silicone. It is colorless, odorless, and is not corrosive. It is applied from a dilute oil-in water emulsion, then the fabric is dried at a convenient temperature. Tests indicate that the finish has exceptional durability to laundering and dry-cleaning. Results of these tests, and details of application of the water repellent are given.

Swell-resistant finishes. H. Rath. *Textil-Praxis 4,* 135-37 (Mar. 1949); *in German.*

This is a brief discussion of the status of swelling-resistant finishes for cellulosic fibers, including mercerization, treatment with resins, combinations of these methods, and various types of polymeric materials which can be used for this purpose.

Synthetic resins and their application to cotton and wool. L. T. Muus. *Tids. Textilteknik 8,* 13-26 (Feb. 1950); *in Danish.*

(Publication No. 46, Danish Institute for Textile Research). The first part of this paper is a review of methods for improving cellulosic materials by means of urea-formaldehyde and melamine-formaldehyde resins and describes the improved products, and discusses the improvement of wool with the emphasis on the treatment of wool by silicones and melamine-formaldehyde resins. The method of Baldwin, Barr and Speakman using anhydro-carboxyglycine is also discussed.

Waterproof coated fabric that breathes. Anon. *Textile World 100,* 109 (Mar. 1950).

(Based on a report by Geo. E. Martin, Harold S. Sell & Bruce W. Habeck.) Goodyear and the U. S. Quartermaster Corps have developed a water impermeable fabric made from a tightly-woven water-repellent fabric coated with a solid pigment with a rubber cement binder. Coating is applied 3 times, and amounts to 4 to 5 ounces per square yard. The fabric will withstand 5 washings or dry cleanings. Field tests are now being conducted. Two tables give physical properties and body-perspiration transmission.

Waterproofing of textiles. E. E. Halls. *Textile Mercury & Argus 122,* 107, 109-10 (Jan. 20, 1950).

The reaction between water and textiles is discussed and the principal waterproofing treatments are noted briefly as follows: starch and similar dressings, hardened glue and gelatin treatments, aluminum hydroxide impregnation, aluminum resinate soap formation, wax treatments, wax emulsion processes, tar and bitumen treatments, copper naphthenate solution, rubber latex compositions, varnish coated materials, rubber coatings, plastic waterproof coatings, and chemical conversion treatments.

Zirconium compounds in water-repellents for fabrics. W. B. Blumenthal. *Ind. Eng. Chemistry 42,* 640-42 (Apr. 1950).

The use of zirconium compounds in water-repellent treatments for fabrics is reviewed, and the general mechanism of water-repellence is outlined briefly. Experimental work is reported which shows that zirconium salts used alone confer some water-repellence, and when used together with soaps and wax emulsion provide excellent repellence. Laundering or dry cleaning generally destroys the water-repellence, but treatment with an additional solution of a metal salt having a strongly acid hydrolysis may be employed to stabilize the repellent coating to some extent. Variation of effectiveness with type of fabric is shown for one treatment.

TESTING AND MEASUREMENT G

Classification of wool. Geo. C. LeCompte. USP 2 499 395, Mar. 7, 1950.

This invention provides a method in which wool fibers are cut into short sections of uniform length, preferably no greater than 200 microns in length, the sections then suspended in a solvent, and allowed to settle. The coarse fibers settle more rapidly than fine fibers, and by this sedimentation technique the fibers in a section of wool are distributed into a continuous array determined to a substantial extent by the fineness of the fibers under test. The advantages of this method are as follows: 1) it deals with a great number of fibers at one time, 100,000 to 200,000 short cross-sections being easily settled together; 2) it is completely independent of individual judgment. The degree of settling is determined by the solvent used, its temperature, and by the fineness of the fibers under test; and 3) the technique is rapid. The actual sedimentation may be completed in 74 seconds. It is possible to obtain final results in

about 30 minutes on any sample as contrasted with an all day testing period on some samples by microscopic measurement.

Comparison of 2 methods for testing detergents. Geo. E. Barker & Curtis R. Kern. *J. Am. Oil Chemists' Soc. 27,* 113-16 (Apr. 1950).

A comparative study was made of 2 common methods of measuring detergency. It is shown that the method involving the measurement of light reflectance of soiled and washed fabrics gives results which lead to essentially the same conclusions as does the method involving the determination of the light transmission of wash liquors for a typical non-ionic detergent and a typical anionic detergent. The 2 methods did not give comparable results when tallow soap was used. A simple experimental method which indicates the applicability of the method involving the measurement of light transmission of wash liquors was devised.

Determination of wetting properties. J. Stadler. *Textil-Praxis 4,* 128-31 (Mar. 1949); *in German.*

This is a critical discussion of the usual methods for determining the wetting action of various surface-active agents on textiles.

Equipping the textile laboratory. Max Matthes. *Melliand Textilber. 31,* 133-36 (Feb. 1950); *in German.*

This article lists and describes the fittings, apparatus and inventory needed to equip a large textile laboratory, followed by a short description of the reagents, indicators and other chemicals together with a summary in tabular form. Testing methods are dealt with briefly. Finally the risks involved in laboratory work are discussed and accompanied by hints on first aid measures in case of accident.

Fading of colored materials by light and radiant energy. A. H. Taylor & W. G. Pracejus. *Illuminating Eng. 45,* 149-51 (Mar. 1950).

Tests are reported which indicate that fading of colored textiles by daylight is due principally to energy in the visible spectrum. Any filter which will reduce fading by daylight or most artificial lights will therefore pass only red light and will greatly alter the apparent color of fabrics. For a given source, fading depends on footcandle-hours of exposure, regardless of exposure duration. It is greatly reduced by evacuation of the enclosure, is not appreciably dependent on humidity, and is affected little by temperatures up to 120°F (but accelerated at 150°). Different illuminants vary in their fading power. Incandescent or fluorescent lights, from 30 to 50% as effective as daylight, required 50,000 footcandle-hours to produce perceptible change in half the samples tested. One standard fading hour (N.B.S. booklets No. 60 and 306) was equivalent to 5700 footcandle-hours of mixed July sunlight and skylight. Ultraviolet is not more effective than visible light, except below 3000 Angstroms, and quantitative correlation of fading with very short-wave ultraviolet and with visible light is difficult.

Measuring fiber length. A. Zart. *Melliand Textilber. 31,* 94-9 (Feb. 1950); *in German.*

The committee for development of methods for testing fibrous materials for the use of fiber manufacturers is revising and amplifying the FaChem-Fa prescriptions, which it is intended to publish regularly. The beginning is now made with the description of the method for determination of the fiber length and the average fiber length with the aid of a device for combing out the staple.

Measuring irregularity of yarns. Hans Conrad. *Melliand Textilber. 31,* 163-65 (Mar. 1950); *in German.*

Irregularity of yarns is usually expressed as percentage deviation of the lower mean from the median. The author here proposes to consider the inclination of the breakage curve found from a graph of the whole of the individual breaking figures as a measure of irregularity, whereby it is unnecessary to prepare a graph for each single case. The angle of inclination can be readily calculated from the breakage figures, whereby a distinction must be drawn between the total inclination and the inclination of the means.

Perimeter measurements of cotton fibers in the primary-wall stage; a method and its application. Norma L. Pearson. *Textile Research J. 20,* 152-64 (Mar. 1950).

A method for obtaining information regarding perimeter differences of mature cotton fibers by measuring the perimeters of the fibers in the primary-wall stage is described. Tufts of young fibers were cut from the seed, stained, fanned out on a glass slide, and dried. The width of the collapsed dried fiber = half its perimeter at the point measured. Perimeters were measured for 9 types of cottons selected to represent a range in size of permieters. Average perimeter values obtained were compared to and found to show differences that were consistent with perimeter

values for the mature fibers of the same types of cotton.

Production and standardization of a detergent soil. Jay C. Harris & Earl L. Brown. *J. Am. Oil Chemists' Soc. 27,* 135-43 (Apr. 1950).

The authors describe their method of preparation of a standard soil and soiled fabric. The process is described in some detail under the following headings: fabric, desizing of fabric, soil, soiling machine, wash test machine, wash test method, storage, evaluation of washed swatches, soiled fabric testing statistical data, control chart data, and application to practice.

Quantitative analysis of polyamide mixture yarns. Andreas Agster. *Textil-Praxis 4,* 138-39 (Mar. 1949); *in German.*

Tests for nylon and perlons are reviewed, and a method for determining nylon and perlon in mixtures with rayon and natural cellulose fibers is described. Warp and filling are separated, degreased, dried and weighed. The polyamide is dissolved by concentrated formic acid and the sample filtered, washed, dried and weighed again. Additional treatment is required for special mixed yarns. An example is given illustrating the analysis of a wool-perlon mixed yarn.

SECOND ANNUAL COTTON MERCHANDISING CLINIC PROCEEDINGS Austin. Texas, The Cotton Research Committee of Texas and The University of Texas, June 30, and July 1, 1949. 105 p.

Included in these Proceedings are the following papers: Brief report of the use of instruments for grading cotton, by Joel F. Hembree; Commercial application of the Fibrograph, by K. L. Hertel; Development and use of the Pressley flat bundle strength tester by cotton manufacturers, by Helen G. Beasley; Methods of determining maturity, by Mary Anna Grimes; Some results of cooperation between the cotton research committee cotton merchants and mills, by Joel F. Hembree; Use of the air permeameter for determining cotton fiber fineness, by Geo. W. Pfeiffenberger; Commercial application of the Micronaire, by L. D. White; Commercial application of the arealometer, by K. L. Hertel; Recent developments at the Southern Regional Laboratory of interest to the cotton trade, by Mason DuPre; Cotton fiber testing instruments and their limitations, by Earl E. Berkley; and Use of a fiber laboratory by the cotton mills, by C. C. Wilson. Discussions of the papers are also given.

Study of some of the factors involved in measuring flammability of consumer textiles. Edwin

J. Johnstone. *Am. Dyestuff Reptr. 39,* P194-98 (Mar. 20, 1950).

Modification of the AATCC Flammability Tester by elimination of sample-supporting wires and design of a new sample holder resulted in increased ease of manipulation and permitted various testing operations to be carried out without further handling of the test strip prior to the rate-of-burning determination. Installation of an electric system of timing allowed for more precise measurement of extremely rapid flash burning in this research. Early models of the AATCC Flammability Tester showed a tendency towards failure of the mechanical timing system, but this has now been corrected by the manufacturer by the installation of counterbalancing weights, and other changes of the leverage system. The present investigation has demonstrated that variation between individual samples and reproducibility of test results appear to be dependent primarily upon fabric variation and differences in nap or pile of a fabric.

Uniformity of grading of the American, British and German light-fastness standards. I. H. Godlove. *Am. Dyestuff Reptr. 39,* P215-21 (Apr. 3, 1950).

The Color Committee of the AATCC used tristimulus values and the Adams formula to calculate color differences caused by exposure of British, German and American Light Standards to sunlight and Fade-Ometer light. Tristimulus values were obtained automatically with a GAF-Librascope tristimulus integrator upon examination of the unexposed and exposed standard dyeings in a GE (Hardy Recording Spectrophotometer. The behavior of the American (Christison) Light Standards was far superior to the behavior of the British and German Standards for grading fastness to light.

What do you want to know about standards departments. C. W. Bendigo. *Textile World 100,* 101-07 (Mar. 1950).

A survey was made of 27 mills which had standards departments to obtain answers concerning the operation of standards departments, the personnel and facilities required, etc. The information given should be of assistance to mills planning the establishment of a standards department, or it could assist in the evaluation of departments already established.

Clothing and fabrics G 1

Chemical changes in wool resulting from wear

and dry cleaning. Ethel L. Phelps, Lillian O. Lund & Helen W. Norton. *Am. Dyestuff Reptr. 39,* 177-80, 202 (Mar. 20, 1950).

Alkali solubility, and the percentage of nitrogen, sulfur and ash, were chosen as measures of chemical change resulting from wear and/or dry cleaning in 3 weights of new, all-wool serge made into men's trousers and subjected to actual use. Data showed that, in general, alkali solubility increased as dry cleaning and wear with dry cleaning continued, the effect of wear being more pronounced. Nitrogen content of the 3 serges decreased steadily as dry cleaning and wear increased. The findings for total sulfur were erratic. Differences noted in ash content represented, in general, some increases with increasing numbers of dry cleaning and some losses associated with increasing wear after the first 1500 hrs.

Comparison of effects of laundering and dry cleaning on corduroy. Doris Saxon, Pauline E. Keeney & Henrietta M. Thompson. *J. Home Econ. 42,* 33-8 (Jan. 1950).

In this study the effect of dry cleaning and laundering upon light-weight (pinwale) corduroy was compared. Factors considered were surface appearances, dimensional change, colorfastness, and flexibility. In the laundering process, the corduroys became stiffer and less flexible, while in the dry cleaning process used they lost their original or sizing body and became soft and limp. Laundering caused excessive fading and progressive shrinkage. Markings were noticed on the fabrics after laundering and dry cleaning which were due to an irregular flattening of the pile and what appeared to be an uneven distribution of color. The dry cleaning procedure used, employing a petroleum solvent, apparently deposited soil and oil on the cotton fabric and greyed and darkened all colors. The poor launderability of the corduroy was attributed to the poor quality of the material on the market. The dry cleaning process used would not be satisfactory on garments made of the lighter shades of corduroy tested.

Determination of weaving take-up. Helmut Köb. *Textil-Praxis 4,* 110-12 (Mar. 1949); *in German.*

Descriptions are given of 3 tests for determining weaving takeup: 1) smoothing by hand, 2) stretching by hand. and 3) stretching by weight. Incisions are made at regular intervals along the warp and weft edges, to obtain threads, and the portions are removed between the incisions. Measurements are made of the distance between incisions and the stretched length of the thread, and the percentage take-up is calculated. Smoothing and stretching by hand are described and an apparatus for stretching by weights is illustrated. Practical values for weights are given. All 3 methods have about the same accuracy. The mean of 10 measurements for each determination should yield results the error of which should not exceed ± 1%.

Effect of certain detergents on the service qualities of a cotton and a spun rayon fabric. Ester Cormany & Ruth E. Gates. *J. Home Econ. 42,* 284-88 (Apr. 1950).

This is an account of a study made to compare the effect of laundering with selected soaps and synthetic detergents on a cotton and a spun viscose rayon fabric of similar construction and color and to compare the effect of light on the fabrics when dried in the laboratory and in the Fade-Ometer.

Measuring degree of shrinkage. Anon. *Melliand Textilber. 31,* 12-16 (Jan. 1950); *in German.*

The trend of the curve of a yarn in the normal plain weave construction is approximately equal to the continuous semi-circumference of ellipses lying one behind the other. The author has developed a simple formula based on that fact by means of which the degree of shrinkage or contraction both warpways (E_k) as well as weftways (E_s) can be calculated in advance without further data than the metric yarn count Nm_k (warp) and Nm_3 (weft), as well as the number of threads per mm A_k (warp) and A_s (weft). The equations are valid only for plain woven gray goods composed of crude flax or cotton yarn. Variations in the mean contraction of warp and weft in the above fabrics are provided for by constants and incorporated into the formulas. Comparisons between measurements of shrinkage made on finished fabrics and the figures calculated agreed well and showed a maximum deviation of ± 3%.

Proper technique speeds analysis of tricot fabrics. Richard F. Eshelman. *Textile World 100,* 122-24, 248, 250 (Feb. 1950).

Quality demands increase the necessity for better tricot fabric analysis. The tools needed and their use are explained; techniques for determining the pattern knit and for removing 3, 2 or one end for any length or number of courses under various conditions are given in detail. Many diagrams and pictures are included.

Instruments and instrumentation G 2

Measurement or variation of physical states of materials. Ferranti Ltd. Australian P. 136 346, Dec. 16, 1946.

To provide for comparison of the effects of change in a state of dampness of cloth with a standard condition, 2 tuned circuits one of which is the reference standard circuit having a "Q" value corresponding to the required dampness and the other of which contains 2 condenser plates across a coil between which the material to be tested is inserted, are tuned to different resonant frequencies. An oscillator supplies the circuits, the frequency being varied through the 2 resonant frequencies by a rotating condenser so that a voltage proportional to the difference in magnitude of the current output pulses from the 2 tuned circuits is derived. Through diode rectifier, 2 pentodes, and transformer, the pulses from the 2 circuits are rectified and amplified and by addition difference voltage is obtained.

Optical color comparison apparatus. John M. Loggie (to John Robert Powers Products Co., Inc.). USP 2 502 014, Mar. 28, 1950.

Color comparison apparatus, comprising a housing provided with 2 similar compartments, in one of which a color standard may be exposed and in the other, a color sample to be compared therewith, means for similarly illuminating the sample and the standard arranged to illuminate each in the same manner, and means excluding all extraneous light from any other light source, a single viewing area including one field portion adapted to be illuminated by light from the standard and an exactly complementary and contiguous field portion adapted to be illuminated by light from the sample.

Renisometer. Albert Laborde. *L'Industrie Textile 67,* 6-10 (1950); *in French.*

The renisometer measures, not the tension (effort/unit area) but the resistance of the filament to which the tension is applied. A report on its use and the derivations of the formulas needed to evaluate this resistance are presented.

TEXTILE MILLS H

Aids to production. Anon. *Fibres 11,* 49-50, 52 (Feb. 1950).

Several new pieces of equipment are described. The first is a new control gear for doubling frame which prevents overrunning of fancy yarns during doubling. Another is a microscopic thread counter which, while giving the precision and optical power of a microscope, is small enough to fit into a pocket. Also described is a new model drawing frame and new moquette loom with a redesigned wire motion.

American's view on the "Textile Recorder" exhibition. E. D. Fowle. *Textile Recorder 67,* 58-61 (Feb. 1950).

See TTD: *7,* 331.

Boiler feedwater treatment. P. Hamer. *Textile Mfr. 76,* 110-12 (Mar. 1950).

This abstract of a paper presented before the Manchester Association of Engineers, Feb. 10, 1950, discusses the chemical and physical changes in the salts present in natural waters which inevitably occur at boiler temperatures. The aim of feed-water treatment is to alter the course of these changes in such a way that the products are harmless or beneficial. Suggestions are given for proper treatment of feed-water.

Continental developments in textile machines, processes and products. Anon. *Textile Recorder 67,* 84-5 (Mar. 1950).

This is a report of talk by E. D. Fowle on a recent visit to Europe. See TTD: *7,* 331.

Crayon for marking textile materials and the like. Robt. D. Robinson (to Uxbridge Worsted Co.). Can. P. 456 225, Apr. 26, 1949.

A crayon comprising a water dispensible color carrier selected from the group consisting of clay, Fuller's earth, infusorial earth, combinations thereof, and mixtures thereof with bentonite, a phosphate salt selected from the salts of potassium and sodium phosphate in an amount within a range on the order of from 1% to 10% of the weight of the color carrier, a binder selected from a group consisting of glycerine, the glycole, glucose, and diglycol stearate in an amount within a range on the order of from 5% to 15% of the color carrier, and color in an amount sufficient to give the desired shade.

Determination of cotton textile dusts in air. Leslie Silverman & Frederick J. Viles, Jr. *Textile Research J. 20,* 109-22 (Feb. 1950).

Air-borne contamination encountered in cotton textile mills is described; 3 components are found: 1) inorganic material, 2) organic trash, and 3) cotton. In the weave room starch particles from sizing materials constitute a fourth component. Methods for obtaining air samples are described and chemical determinations and

evaluation of the contaminants are given. The advantages and disadvantages of the methods described are noted. Also discussed is grab sampling for specific components.

Flax mill modernization. S. A. G. Caldwell. *Textile Mfr. 76,* 139, 141 (Mar. 1950).

Contemplated new buildings should be designed to accommodate modern units in the right balance to ensure maximum production with efficient performance.

Frame efficiency figures can show up source of losses. Henry P. Lynch. *Textile World 100,* 145, 234, 236, 238 (Feb. 1950).

Losses in efficiency of spinning frames can be shown up by costing methods, then steps can be taken to raise the productivity of the frames. The example given figures the running time per doff; then the per cent downtime for doffing, for waiting for doffers, for scouring rolls, for roll oiling and traveler changing, and for other downtimes that might occur. These per cent downtimes are converted to pounds of production lost from which monetary loss can be computed.

High temperature hot water heating in processing of woolen and worsted fabrics. Leo Walter. *Textile Recorder 67,* 76-7 (Mar. 1950).

It may be possible to achieve savings of 10% in the fuel bill by the use of high-temperature water (200°F), however, the advice of an expert should be sought before installing such a system.

How 53 companies cut costs by fullest use of mechanical service equipment. Anon. *Factory Management & Maintenance 108,* 108-16 (Mar. 1950).

Brief case studies present solutions of maintenance problems in various plants. Six textile mill problems are discussed, in fields of mechanical power transmission, lubrication, and steam generation and distribution.

How to move 10 roving frames in 8 hours. Chas. H. Leach. *Textile World 100,* 132-33 (Feb. 1950).

Crown College has developed equipment made of angle and channel iron in 6 and 12 ft. sections for moving long pieces of machinery. This eliminates the necessity for removing rails, shafts, creel boards, etc. before moving the frames. Illustrated to show construction and methods of use.

Is your steam dryer eating up money? Tyler G. Hicks. *Textile World 100,* 149, 151 (Feb. 1950).

Air trapped in the drying cylinder serves as insulation and reduces surface temperature. Usually, devices for automatic removal of this air will pay for themselves in reduced steam consumption. Water logging results when one steam trap is used for 2 or more cylinders. Leaks in pipes and joints will also cause water-logging. Proper steam pressure should be used with the drying cylinders. Illustrated with diagrams.

New steam plant designed for big load. E. Dalton White. *Textile World 100,* 141, 143, 230 (Feb. 1950).

Holliston Mills have a carefully engineered steam generating plant at Kingsport, Tenn. Insulated steam lines, latest type boilers and firing equipment, and conveyor loaded coal silo are features of this plant. Above 75% of the condensate returns to the boilers and is supplemented with softened water. The coal silo provides storage and a constant feed to the boiler. Coal flows by gravity to the stoker hoppers. All this has resulted in uniform performance and simplified operation. Diagrams of the silo are given.

Nylon stands the gaff. Anon. *Modern Plastics 27,* 105-06 (Apr. 1950).

Textile machinery applications of nylon to date fall into 4 classifications: 1) spindle parts; 2) loom bearings; 3) drafting equipment; and 4) thread guide parts. This paper describes a new aluminum and nylon bobbin of exceptional durability, and a molded nylon bolster that runs in oil. Cast iron bolsters normally require lubrication after 40 to 120 hrs. of operation; the nylon bolsters require lubrication only every 1560 hrs. Cost of the nylon bolster can be amortized in about a year from savings in oil alone.

Paint treated-lumber roofs for best service. H. W. Angell. *Textile World 100,* 135 (Mar. 1950).

Treated lumber should be painted so that the drip will not be the yellow chrome color of the preservative. Recommended procedure for proper painting is as follows: 1) get lumber far enough in advance so that it will air dry before painting, 2) clean the surface of the wood, 3) apply a prime coat of "aluminum house paint", and 4) use a good grade of paint for the second and third coats and apply it correctly.

Plastics in the textile industry. Leo Kollek. *Melliand Textilber. 31,* 26-31 (Jan. 1950); *in German.*

The 3 sections of the present survey show the

great importance that plastics have acquired in practically every branch of the textile industry during the last few years. Part A describes the synthetic fibers that have already found practical application together with their special properties. Part B deals with the possibilities of use of fully highly polymerized products for sizing, finishing and impregnating fabrics, and Part C finally discusses plastics in the construction of textile machinery and apparatus.

Prevention of moth damage. Anon. *Wool Record & Textile World 77,* 103-04, 106 (Jan. 12, 1950).

The life cycle of the moth is reviewed and suggestions are given for storing wool and woolen goods so as to minimize damage from moth attack. A well-lighted warehouse is less likely to attract or retain clothes moths than a dark one, and is less likely to have eggs laid in it. The simplest precaution is to maintain as low a temperature as possible in the warehouse in order to prevent the grubs from feeding.

Refrigeration can pay for itself. P. L. Davidson. *Textile World 100,* 159, 161 (Feb. 1950).

(Extracted from a paper presented to the Textile Section, ASME). Refrigeration used in conjunction with split systems using saturated air plus added atomized moisture have resulted in lower cost of air handling equipment. In specific cases refrigeration has reduced loom stops, reduced seconds, and increased efficiency; it has made possible increased spinning spindle speeds, increased work loads, with no increase in ends down.

Synthetic resin ion exchangers. W. Wesly. *Melliand Textilber. 31,* 62-5 (Jan. 1950); *in German.*

Synthetic resin ion exchangers are known in Germany under the registered trade name "Wofatit". The present article describes the chief properties and the method of operation of Wofatit filters, which are used: a) for the production of softened water for power plants, for the textile industry, for laundries and dyers, and for the production of plastics, in metallurgy and for the electrolysis of alkali chloride; b) for the production of pure solutions in the recovery of sugar, pectins, organic bases, polyvalent alcohols, milk, colloid lyes, brines and pharmaceuticals; c) for the production of valuable metal salts, potassium nitrate, phenols; d) for the separation of metal salts; and e) as contacts.

Textile developments and problems. Anon. *Textile Recorder 67,* 66-8 (Feb. 1950).

This is a brief summary of the discussions of textile developments and problems at the 70th annual meeting of the American Society of Mechanical Engineers. Subjects covered include: air conditioning, use of glass fibers, instrumentation, and need for engineers.

They use scale models to get layout changes adopted. (Staff interview with men from Magee Carpet Co.). *Factory Management & Maintenance 108,* 90-2 (Mar. 1950).

When a need for new, wider looms called for a building addition, study of layout changes by means of scale models resulted in considerable time savings through faster and more accurate visualization of equipment and layout. "Selling" ideas to management and operating groups was expedited and the models have since proved valuable in planning further layout changes and even in settling labor controversies.

Treatment of cotton-finishing waste liquors. Geo. E. Bogren. *Ind. Eng. Chemistry 42,* 619-21 (Apr. 1950).

Pilot plant experiments are described toward abatement of stream pollution by wastes from caustic and peroxide kiers, bleaching, dyeing, mercerizing, and various special finishing processes. At present all wastes are treated by subsidence, and about 15% by trickling filtration through crushed stone and intermittent filtration through a fine cinder filter. The wastes vary widely in alkalinity from hour to hour. For this reason and for economic reasons, when complete secondary treatment was considered pilot tests were run on high-rate trickling filters. Results showed that B.O.D. removal of at least 60% was possible at a rate of filtration of 10 million gallons per acre per day.

Treatment of cotton printing and finishing wastes. Stuart E. Coburn. *Ind. Eng. Chemistry 42,* 621-26 (Apr. 1950).

A pilot plant was operated during 1948 to find the most feasible method of treating cotton printing and finishing wastes before discharge into the Delaware River. It was found that construction costs of a high-rate trickling filter plant would be approximately $45,000 more than a chemical treatment plant, but that net annual charges would be about $25,000 less; the difference in charges was largely due to labor and chemicals costs. High-rate trickling filters present fewer complications in operation and a less serious

sludge-disposal problem. Results are given of analyses of wastes and treated effluents under varying operating conditions, and estimated costs of constructing and operating a plant to handle 2,000,000 gallons a day.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Acetate properties. Salt effect in cellulose acetate. Carl J. Malm, Leo J. Tanghe & Glenn D. Smith. *Ind. Eng. Chemistry 42,* 730-34 (Apr. 1950).

Salt effect is a measure of the increase in viscosity of cellulose acetate caused by the presence of certain salts. A procedure for measuring salt effect is described. Data presented show that the effect is higher with salts of polyvalent metals (e.g., calcium) that with monovalent (sodium); that the viscosity increases with salt concentration, at a rate dependent on the nature of the salt; that the effect is more pronounced at higher pH of the salt rinse solution; that the effect is greater in ketones and esters than in solvents containing hydroxyl groups; that the effect is greatest for a degree of hydrolysis which gives borderline solubility (and high viscosities); and that carboxyl groups (present in wood pulp cellulose or produced by oxidation of acetate from linters) or combined sulfate groups cause a strong increase in salt effect. A mechanism for the effect is proposed.

Constitution of pure cellulose. Kurt H. Meyer, M. Studer & A. J. A. van der Wyk. *Nature 164,* 786-87 (Nov. 5, 1949).

It was found that both cotton and α-cellulose from wood pulp, if reprecipitated from cuprammonium solution, washed, acidified and electrodialyzed, are free from carboxyl groups. Samples of this highly swollen cellulose were shaken in a closed platinum dish with 0.6 N sodium chloride the pH of which had been adjusted to 6.2. After 6 days contact with the salt solution in order to establish the equilibrium, no change in pH was observed. It follows that no groups of a dissociation constant higher than 10^{-7}, and therefore no carboxyl groups, exist in this cellulose. In contrast, groups with a dissociation constant of 10^{-5}, probably carboxyl groups, have been found in the so-called β-cellulose which is extracted from purified woodpulp by 17% caustic soda. Approximately one group per 40 glucose residues was found. Since the existence of the β 1-4 polyglucosan has thus been demonstrated, and since by far the greater part of cellulose fibers consists of it, it is proposed to term this polysaccharide "pure cellulose."

Degradation of cellulose as revealed miscroscopically. Chas. W. Hock. *Textile Research J. 20,* 141-51 (Mar. 1950).

Degradation of natural cellulose proceeds in a manner which reflects its basic fibrillate structure. The thread-like fibrils into which cellulose breaks down vary in dimensions, depending upon the nature of the treatment and innate differences in the cellulose itself. The election microscope reveals fibrils on degraded cellulose even smaller than those shown by the optical microscope. Some degradative treatments cause a further transverse splitting of these fibrils into rod-shaped structures. Microscopical studies show that many reactions proceed more easily in the regions between the cellulose fibrils than within the fibrils themselves. It appears, therefore, that the crystalline cellulose is located principally in the fibrils, whereas the inter-fibrillar regions compose, in large measure, the amorphous fraction.

Degradation phenomena in wool. (English abstract only). J. B. Puig. *Fibres 11,* 44-6 (Feb. 1950).

In this English abstract of an article in Spanish appearing in *Anales de Investigation Textil* (TTD: *7,* 246) the author's investigations of degradation are noted. The microorganisms chiefly active on wool are *B. subtilis, B. mesentericus, B. megatherium, B. Micoides, Pseudomonas, Proteus,* (e.g., *P. vulgaris*), *Alcaligenus,* certain *Streptococci* and *Staphylococci,* together with some members of the *Actinomycetes.* Mechanical abrasion effects are also noted.

Detergent materials. II—Protective colloid action. Kurt Lindner. *Melliand Textilber. 31,* 58-61 (Jan. 1950); *in German.*

Interfacial activity and protective colloid action are the 2 chief characteristics of a useful detergent. A process is described for the quantitative determination of protective colloid action which consists in the production of dispersions of soot by means of 2 solutions of detergents of different strengths, and measuring the opacity of these solutions by the photoelectric process. It is, thereby, brought out that not all basic materials with a powerful interfacial action are good protective colloids, while substances with a moderate interfacial action or which even show no such action may be good protective colloids. The author shows by means of practical trials that the best basic materials or mixtures thereof are those in which

the solution in the concentration as used has a good colloid action combined with an adequate interface activity. For Part I see TTD: *6*, 302.

Effect of moisture on twisted yarns. Jas. B. Maginnis. *Textile Research J. 20*, 165-71 (Mar. 1950).

The effect of moisture on certain physical properties of twisted continuous-filament rayon yarn was studied. Data are given on the changes in stress, dimensions, and moduli for the yarn and the component filaments. An expression, giving a qualitative relationship between yarn properties and yarn construction, based on the knowledge of filament behavior, is presented.

Effect of physical pretreatment on the ease of saponification of cellulose acetate material. C. P. Tattersfield. *J. Soc. Dyers Colourists 66*, 9-16 (Jan. 1950).

The effects of variations in physical pretreatment on the ease of saponification are discussed. Also described are the possible uses of these observations in 1) producing effects by differential saponification followed by dyeing, 2) the detection and identification of faults in yarns or fabrics, and 3) helping to elucidate the surface structure of commercial cellulose acetate materials.

Electrophoretic mobility in relation to suspendability and detergency. Anon. *J. Colloid Sci. 5*, 100-03 (Feb. 1950).

A short study of zeta potential and suspendability is reported. No correlation between the two is found. It is suggested that changes in zeta potential do not *per se* give rise to suspendability or detergency. Some speculations are made as to the role of detergents in redeposit and soil binding.

Examination of rayon cross-sections with the electron micrscope in conjunction with supplementary light-microscopic observations. P. H. Hermans. *Textile Research J. 20*, 105-08 (Feb. 1950).

In a communication to the editor, the structure of viscose rayon is discussed on the basis of photomicrographs of cross-sections made with the electron microscope and optical microscopes.

Fabric research. *News Letter* (U. S. Dept. of Commerce, O.T.S.). (Apr. 14, 1950). PB 99 400, microfilm $2.75, photostat $7.50.

Considerable data of interest to the problem of the degradation of cotton textiles due to exposure to sun, rain and other weathering agents and during storage after weathering are contained in a Brooklyn Naval Clothing Depot report. Atmospheric acidity, such as caused by hydrogen sulfide or carbonic acid from burnt fuel was found to be a deteriorating factor which continued its effect even during post-aging. Scant consideration had been given to this latter type of aging by previous investigators.

Mercerization. K. Schwertassek. *Melliand Textilber 31*, 188-92 (Mar. 1950); *in German.*

A number of years ago the author worked out the determination of iodine sorption for the recognition of mercerizing defects and the determination of the degree of mercerization, and now gives an explanation of the theory of its functional action. On the basis of experiments he arrives at the view that iodine sorption is a measure of the amorphous constituent. The effects of the mercerizing process are ascribed, to a certain extent, to a decrease of the crystalline constituent. The sensitiveness of mercerized cotton to hot wet treatment, such as rinsing, drying, dyeing, are recognized as being mainly recrystallization processes. The amorphous hydrated cellulose represents a metastable form of cellulose which aims at transformation into the more stable crystalline phase.

Microbiological deterioration of cellulose during the first 72 hours of attack. Edw. Abrams. *Textile Research J. 20*, 71-86 (Feb. 1950).

Cotton duck attacked by microorganisms was reduced in strength from 35% to 60% during the first 72 hrs. of attack. This investigation was made to study the changes which take place in cellulosic fibers due to the action of 5 cellulolytic molds during the first 72 hours. The organisms studied were *Thielavia* sp., *Humicola* sp., *Stemphylium* sp., *Chaetomium globosum,* and *Myrothecium verrucaria.* Mildewed fibers in dilute alkali showed the localized nature of attack by cellulolytic molds and the production of alkali-soluble material in the areas of attack. As the attack proceeds, the cellulose becomes soluble in decreasing concentrations of alkali and finally becomes soluble in water. Study by infrared absorption of cellulose films after partial digestion by *Chaetomium globosum* revealed no significant effects other than reduction in thickness of the films. Indirect methods used for the identification of cellulose decomposition products were 1) study of the action of cellulolytic molds on sugars and sugar derivatives, and 2) testing of cellulose derivatives such as cellulose acetate, partially acetylated cellulose, cellobiose octacetate, and glucose pentacetate. Enzyme extracts from *Chaetomium*

globosum digested degraded forms of cellulose but not native cotton fibers.

Relaxation of stress in wool fibers. Sidney M. Katz & Arthur V. Tobolsky. *Textile Research J. 20,* 87-94 (Feb. 1950).

A study was made of the decay of tension of Columbia 56s wool fibers, maintained at constant temperature and extension, in water, in solutions of sodium bisulfite of various concentrations, and in neutral salt solutions. Experimental results obtained in water were similar, but not identical, to results found by other workers for human hair. The rapid stress decay of stretched wool occurring when sodium bisulfite is added appears to be due to a chemical reaction in which the cystine linkages are involved. At sufficiently high concentrations the rate becomes independent of bisulfite concentration. In the presence of neutral salts, such as sodium chloride, a much slower stress decay occurs.

Research into the structure of the wool fiber. H. Zahn. *Melliand Textilber. 30,* 275-81 (July 1949); *in German.*

In studies of the morphology and chemistry of wool and related fibers, as revealed by recent publications, more attention has been paid to the discrepancies between the known patterns and schemes and the experimental facts. A review is given of the intermediate membrane, new methods for the fractionation of wool and hair, supercontraction and softening temperature. In order to detect damages of wool fibers, it is suggested that different methods (extension at break, permanent set, longitudinal swelling, supercontraction, dyeing tests, alkali solubility and plumbum acetate test), be continued.

Stabilization of periodate-oxidized cotton. Richard E. Reeves & Felix F. Darby, Jr. *Textile Research J. 20,* 172-74 (Mar. 1950).

Previous observation regarding the stabilization of periodate-oxidized cotton fiber by treatment with chlorous acid or ethereal diazomethane were confirmed and evaluation of the treatments was extended to cotton sewing thread. At low levels of oxidation the treated samples retained considerably more strength after exposure to sodium carbonate solution than did samples oxidized but not given stabilization treatment. At high levels of oxidation the stabilizing treatments produced good reductions in alkali-solubility.

Sorption of sodium silicates and silica sols by cellulose fibers. Reynold C. Merrill & Robt. W. Spencer. *Ind. Eng. Chemistry 42,* 744-47 (Apr. 1950).

Data are presented on the sorption of alkali and silica from sodium metasilicate, $Na_2O.3.37SiO_2$, N-Sol A, and a sulfuric acid-treated silica sol on bleached sulfite, soda, kraft, and groundwood pulps may find application in textile treatments involving sodium silicates silica sols, or possibly alkalis.

Special dyeing of cotton on the seed gives visual evidence of changes during fiber development. Chas. F. Goldthwait, Herbert O. Smith & Florence T. Roberts. *Textile Research J. 20,* 100-04 (Feb. 1950).

A process of differential dyeing was used to show that the initial drying of normal cotton fibers—as when the boll opens in the field—greatly affects their dyeing properties. A pronounced color difference was observed when a lock from a nearly mature boll, opened in the laboratory, was dried and another lock, kept wet, were both dyed simultaneously in the same dye bath. The dried cotton dyed mainly red and the undried cotton dyed green. Submicroscopic changes in the cotton cellulose undoubtedly take place. Thus, the undried fibers from a cotton boll were shown to be more porous than fibers which were dried in the boll. The thin-walled (immature) fibers in ordinary cotton are similarly more porous than the thick-walled (mature) fibers, at least while in a hot dye bath. The differential dyeing effect with cotton fibers is determined by celulose structure in combination with specific properties of the 2 dyes employed.

Stabilization of casein fibers by desamination. R. F. Peterson & R. L. McDowell. *Textile Research J. 20,* 95-9 (Feb. 1950).

Casein fibers, which have been hardened with formaldehyde solutions, require further processing to withstand boiling acid dye baths. Increased resistance to dye baths is obtained by desamination of casein fiber. Further stability is given desaminated fiber by treatment with acid-formaldehyde solutions, followed by baking at 110°C. The combined treatment reduces dye uptake of both acidic and basic dyes.

Starch and metal salts. R. Haller. *Melliand Textilber. 31,* 49-50 (Jan. 1950); *in German.*

The author aims at characterizing more closely the long familiar compounds of starch and metal salts which have been found to be adsorption compounds, and not chemical compounds. The adsorbed metal oxides change the behavior of

starch to a considerable extent, more especially in respect of enzymatic influences, in connection with which the conditions of the so-called "Degommage" (the fixing of mordant prints) are developed in detail. A modification of starch which Runge prepared by treating starch with sulfuric acid diluted with alcohol is recognized as belonging to the group of soluble starches.

Structure of animal hair. H. Zahn. *Melliand Textilber. 31,* 36-8 (Jan. 1950) ; *in German.*

Recent research work on the morphology of animal hairs is described. The author gives an account of the chemical composition of components of wool fiber as far as being insoluble in pancreatin after having been treated with 50% phenol at 100°C. Methods to isolate the intermediate membrane of human hairs by heating with alkalies are given.

Swelling of textile materials. G. King. *J. Soc. Dyers Colourists 66,* 27-34 (Jan. 1950).

A survey of recent investigations into the absorbing properties of keratin and nylon is described. Because of the complicated nature of the problem very simple systems have been used in which a single swelling agent is adsorbed from the vapor state in an evacuated system. The effect of various swelling agents is discussed. Data in the form of graphs are presented.

Twist structure of plied yarns. E. R. Schwarz. *Textile Research J. 20,* 175-79 (Mar. 1950).

A mathematical discussion.

Washing properties of wool. K. Heddergott. *Textil-Praxis 4,* 122-23 (Mar. 1949) ; *in German.*

This is a short discussion of the mechanical (physical) influences of various drying systems on the quality of washed wool.

TEXTILE EDUCATION AND RESEARCH J

American scientist reviews a year's world advances in textile machinery and fabric finishing fields. Julius B. Goldberg. *Textile Recorder 67,* 64-7 (Mar. 1950).

See TTD: *7,* 342.

Books about textiles. [Compiled by A. F. Kertess]. *Dyer 53,* 274-78 (Mar. 10, 1950).

This is a listing of 197 titles of books pertaining to textiles grouped by subjects as follows: fibers, spinning, weaving and knitting, fabrics, bleaching, dyeing and printing, finishing, dyes and intermediates, testing, and miscellaneous. Out of print and forthcoming publications are so indicated. The list, which is not exhaustive, was compiled after the examination of several important libraries. Prices in Great Britain are quoted.

Cotton research will be coordinated in push to keep fiber competitive. Edw. Jamieson. *Cotton Trade J. 30,* 1 (Feb. 24, 1950).

Under plans recently formulated by the Utilization Research Division of the National Cotton Council, the first complete cataloging of all research, both private and government, into cotton and cotton textiles will get underway shortly. It is hoped to coordinate all research work and show where studies either are not being made at the present time, or perhaps are being duplicated. The objective would be to make available not only current research efforts but also unpublished and possibly obscure information which might be helpful.

Clarification of German textile terms. Paul-August Koch. *Melliand Textilber. 31,* 106-08 (Feb. 1950) ; *in German.*

The author clarifies the terms "faser" (fiber) and "Einzelfaden" (filament) for the various types of textile raw materials, and "Gespinst" (yarn) compared with "Seide" (silk), with the common designation of "Garn" (yarn) for textile semi-finished manufactures. The definitions given are multifariously based; some of the customary wrong applications of these terms are illustrated. In connection with the newly created German basic textile standards the aim should be to apply the concepts mentioned only in the proper sense.

Research and the dyer. T. Vickerstaff. *Textilwezen 6,* 35-7, 39-40 (Aug. 1949) ; *in English.*

See TTD: *6,* 737.

SUGGESTED RESEARCH AND DEVELOPMENT STUDIES FOR THE WOOLEN AND WORSTED INDUSTRY. New York, The Wool Bureau, Inc., 1950. 12 p.

This is a pamphlet designed for those who sponsor, initiate or carry on wool research. Suggested research and development studies are grouped under the following headings: mill processing, laboratory tests and standards, fundamental research, product development, and production and marketing. The emphasis throughout is placed on the statement of the problem. Problems suggested are based on information obtained during visits to mills and research laboratories. In an appendix a summary of research and development projects underway is given.